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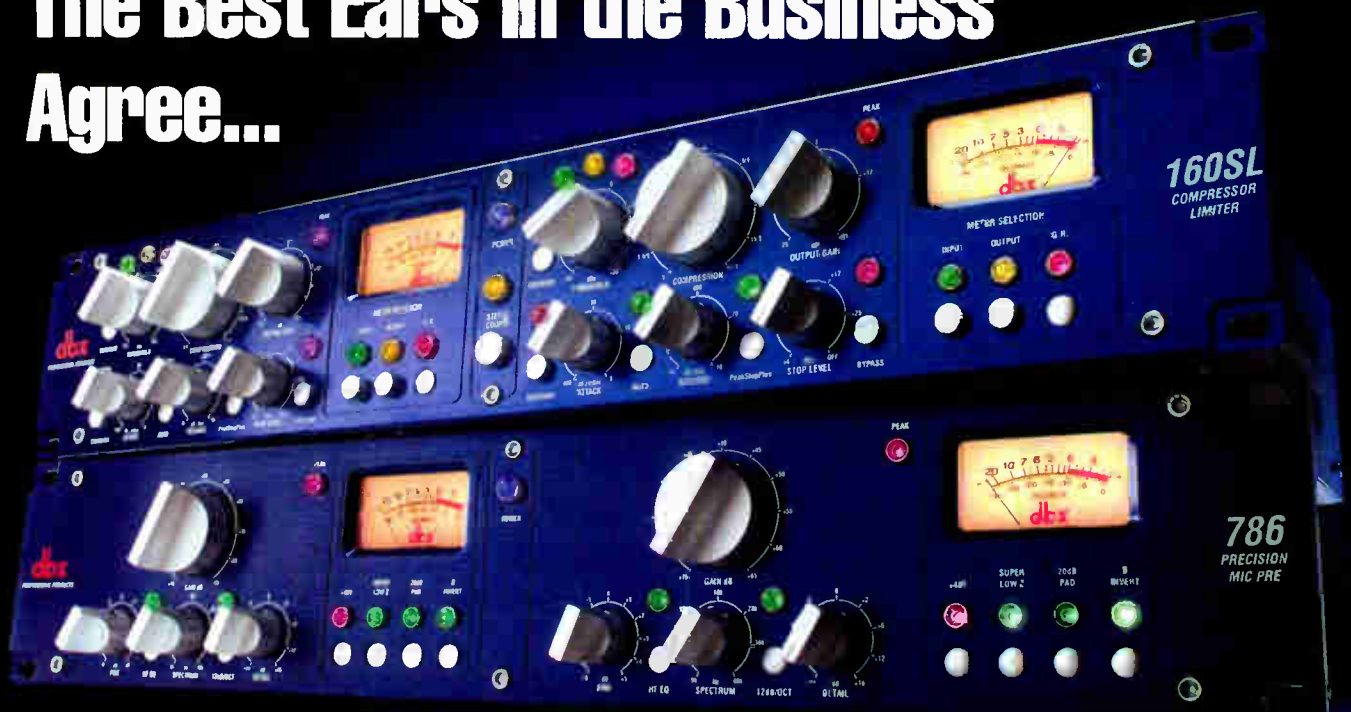

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Producer/Engineering team **Michael Beinhorn and Frank Filipetti** are currently working on the forthcoming Korn CD

"We're using the dbx 160SL on our vocals. It sounds amazing. We tried other compressors but none of them did even remotely what the 160SL did. It just details things so nicely."

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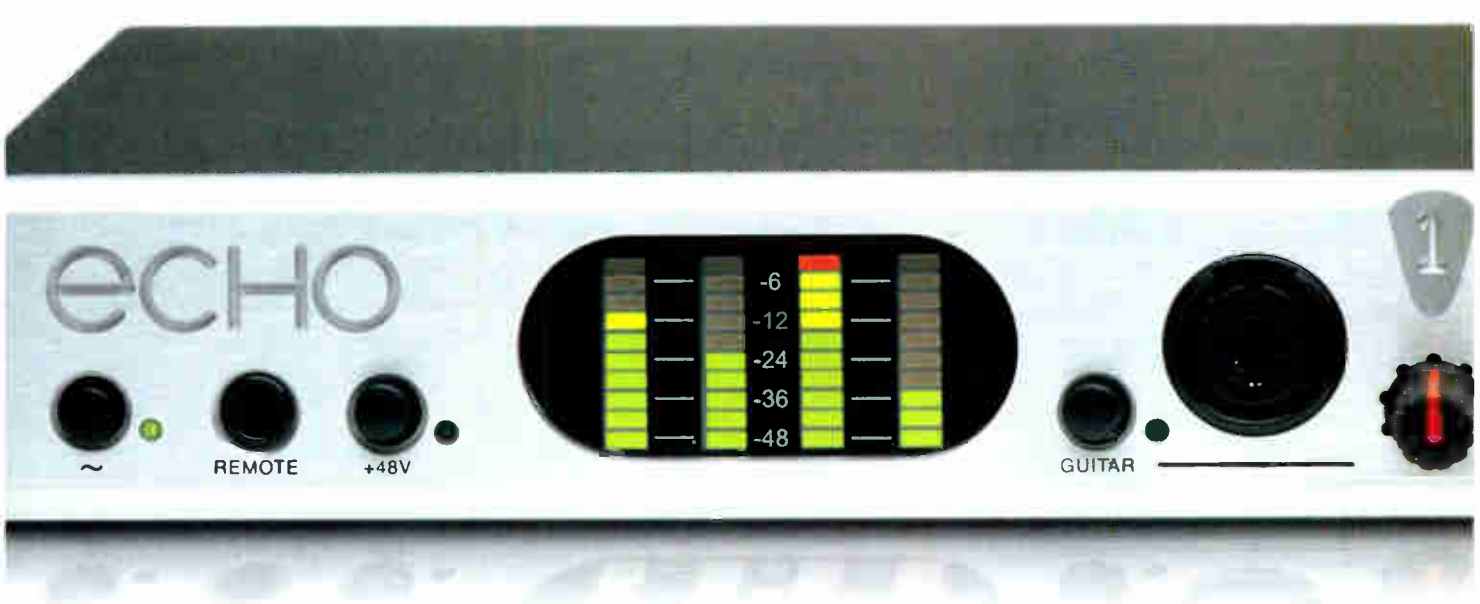

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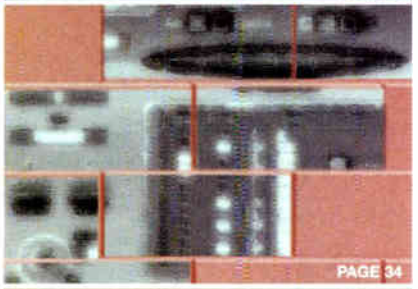
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MIX

PROFESSIONAL AUDIO AND MUSIC PRODUCTION

March 2002, VOLUME 26, NUMBER 4

features

On the Cover: Studio 1 at Cherokee Studios, West Hollywood, was the first Tom Hidley-designed room, built in 1975. Today, it features a new 80-channel API Legacy Plus console, with custom Augspurger monitoring featuring JBL components. **Photo:** Ed Freeman. **Inset photo:** courtesy Saul Zaentz Film Center.

Check Out Mix Online! http://www.mixonline.com

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The Trojan KiloHorse

Old news:192 kHz is here. Actually, there's nothing *new* about 192kHz recording; I made my first 192kHz recording four years ago, using a stereo pair of dCS converters, streaming high-resolution PCM to a Nagra-D for storage. But the news these days is a growing proliferation of affordable 192kHz recording systems and peripherals, ranging from the low-cost I/O interfaces from companies such as Lynx and Ego Sys to Digidesign's much-touted Pro Tools|HD. Suddenly, everybody can go 192.

Don't get me wrong: I'm as much a fan of hyperfidelity as anyone, but with the power to wield a sword as mighty as 24/192 comes the responsibility of doing it right. Making the leap to recording's high-res hyperspace does not magically ensure a wonderful end product. So, while you're looking at a major upgrade, this is a perfect opportunity to re-examine everything else in your recording chain—particularly those analog components such as mics, preamps and speakers (mains and near-fields). Once your workstation can play back sounds with a bandwidth approaching nearly 100 kHz, studio monitors that roll-off at 15k to 18k don't cut it.

The same tenets can be applied to your hard drives. Will they offer reliable performance, given the rigors of high-res multitracking? Even items as lowly as cables—mic, SCSI, etc.—must stand up to the challenge. I once spent an enlightening afternoon running frequency-response sweeps on a box of generic—and not so generic—XLR cables from an old P.A. rig that was stored at my studio. Some of these cables couldn't pass 19 kHz, much less 96 kHz! Scary.

But even scarier to me is a widely held assumption that the arrival of 192kHz production somehow makes everything else obsolete. True, 192 kHz is great, cool, wonderful. However, this hardly means that 96kHz—or even 48kHz—products should immediately be sent to pawn shops and garage sales. The bottom line? If you could make a great record on last year's stuff, then that equipment will still sound great this year, and the same applies to analog.

I guess the moral is: Don't buy into specs for specs' sake. Back in 1988, an artist wanted some background string pads and horn stabs on a project I was tracking. No problem: I had an Emulator II and a huge sample library, but the *artiste* had a brand-new Casio FZ-1 16-bit sampler and didn't want any 8-bit E-II on his masterpiece. We A/B'd both: The E-II smoked the FZ-1, which made everything sound like shrill harmonica. Numbers don't tell the whole story. *Listen,* and use what sounds best.

This is a time to celebrate the new age of 192kHz production—at least until the really cool 32-bit/384kHz gear comes out, but hopefully that won't be for another couple months.

George Petersen

NEWS FLASH!
Just as we went to press, we heard the joyous news about the arrival of Riley Marie Trubitt, a charming 6-pound, 5-ounce addition to the family of our classifieds/marketplace advertising director Robin Boyce-Trubitt and her husband Rudy Trubitt. At last report, mom and dad were taking some days (and sleepless nights!) off to tend to the needs of this future audio engineer. Congratulations!

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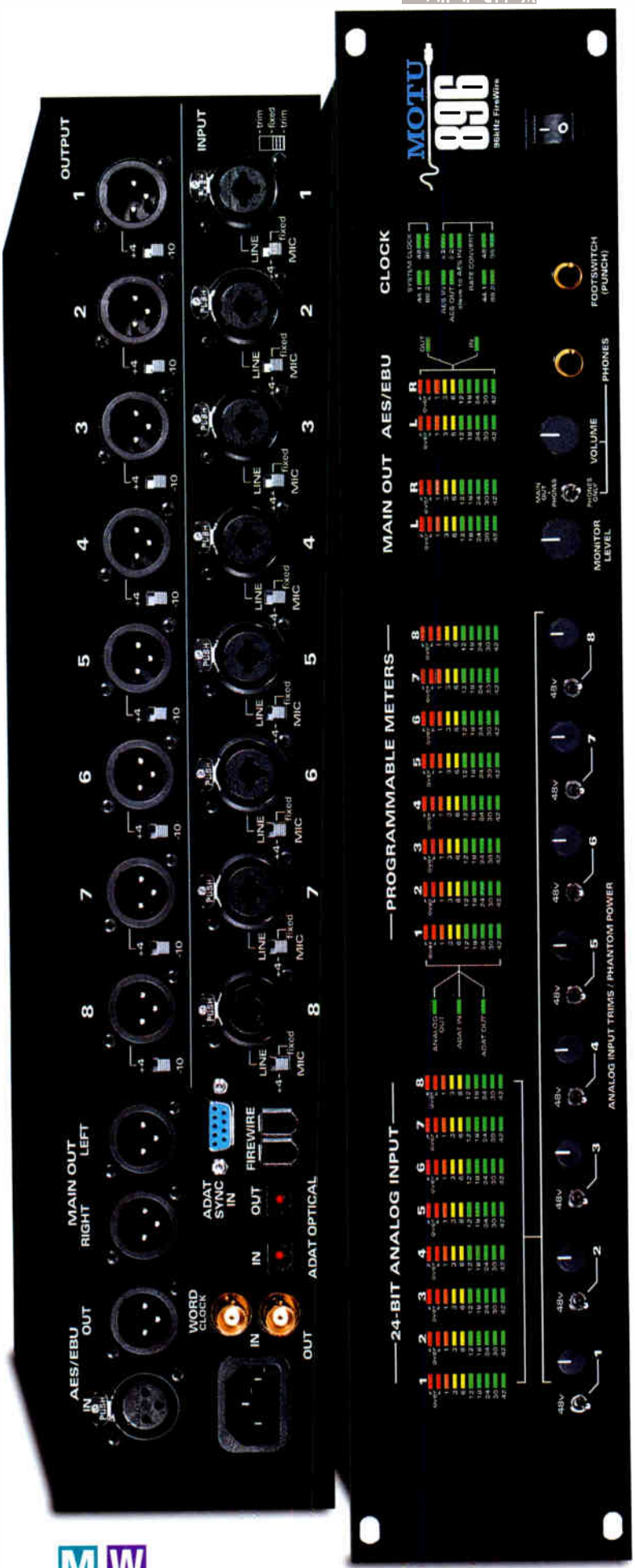

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The Perfect Pro Tools® Companion: TASCAM MX-2424

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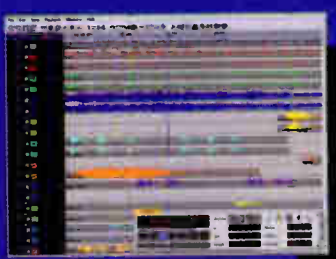

*If you don't have a DAW system, **TASCAM's** MX-View waveform editing software runs in native Mac and Windows versions and connects via a fast 100Mb Ethernet interface. With MX-View, you get sophisticated, sample-level waveform editing, drag-and-drop editing on the fly, click and pop repair with the pencil tool, onscreen metering for up to six MX-2424s, editing across multiple machines, easy management of virtual tracks and much more.*

For all the details on the MX-2424 go to
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Letters to Mix

NIN DIY

Thanks for the interesting interview with Trent Reznor. It was nice to read an article that actually delved into the technical side of his music, and not the rock star lifestyle that seems to captivate so many of today's music fans. Frankly, I don't care too much about what the man does in his free time. I care about his music, his technique and his insight. It was also nice to learn that his DVD and live album were the result of his legendary DIY attitude; it gives faith to those of us slogging it out in the trenches that the only limitations we face as musicians are the ones we set for ourselves.

Like assistant editor Robert Hanson, I also saw NIN for the first time in 1994, and bought Master Trax Pro for the Macintosh six months later. And things haven't been the same for me since. Small world...

Brian Stillman
New York City

DIY, WITHOUT THE FAME

Please give me five minutes and read this. Who am I, you ask? I am a reader of *Mix* and I hope to share my experience with you and your readers. In the '70s, I and three other women were going to have the first all-girl rock band to make it. We recorded an album and did the New York circuit, but we never became famous. Today, after 30 years, three of us still get together at least three times a month and write, play and record our own music. I decided one day to become my own recording engineer with the help of *Mix* magazine. At first, the recording industry was very intimidating to me. The only thing I knew about recording was placing a little boom box in the middle of practice and pressing Play, Record and Stop. It's been two years, and I went from a Yamaha MD 8 to a Tascam 2424 with a [Ramsa] DA7 mixing board. Thanks to your informative articles and many recording tips, I have reached new plateaus.

I just thought you and your readers would like to hear from us undiscovered but talented musicians. We don't have a list of credits after our name, but I bet you would be impressed by our creativity and talent. I owe a lot to *Mix*, and I will continue to be a faithful reader. I will leave you and your readers with this advice: Put no limitations on your ability to learn. Your desire will take you as far as you want to go.

Pat Briand
Mount Arlington, N.J.

TRAVEL PLANS

Two recent developments have collided and raised important questions for the recording professional. Those two developments are the rapid growth in "portable studio" technology, and the paradigm shift in travel procedures, still in evolution, following the September 11 attacks. With more and more baggage being X-rayed, scanned and generally shuffled around by hands lacking ESD straps, what is going to be the impact on the traveling music professional who now fits his studio into two briefcases?

In the near future, hard drives, floppy disks, memory cards and data tapes, among other studio essentials, will likely be impossible to transport by commercial airline, or possibly by other modes of transportation, without getting zapped in some way by the increasingly intrusive, and increasingly powerful, baggage screening technologies. Obviously, mailing/shipping everything is an inconvenient alternative, and that method may be affected in similar ways.

Can you write an article on the impacts of the present and future in baggage screening technology on the present and future of portable studio technology?

Nathan
Via e-mail

Our sound reinforcement editor, Mark Frink, wrote about these issues in the article "Touring in 2002," which appeared in the Live Mix section of last month's issue. If you didn't save your copy, check out the story at www.mixonline.com.

—Editors

TWO MINDS WITH THE SAME THOUGHT

HHB USA alerted me to a letter by Brit Fader in the January 2002 issue of *Mix*, which referred to a supply problem with the Analog Devices SSM2017 preamp chip, which we use in our VTC console. As we don't receive *Mix* magazine anymore, I would have been unaware of this letter unless HHB had spotted it.

I'm a little surprised and disappointed that no one from *Mix* contacted us to check the details of this before running the letter. I would have given you the whole story, which is:

- We secured a healthy stock of these chips once we were aware that they were going out of production. And you can still find them on the open market—they are expensive but can be sourced.
- THAT Corporation has developed a direct plug-in replacement for the 2017 (called the 1510), details about which can be found at www.thatcorp.com. We are expecting the chip to reach the UK shortly.
- We also have the option of designing a small plug-in PCB that contains a discrete mic preamp circuit, which would plug into the space the SSM2017 currently occupies on the VTC. This third option would only be necessary in the highly unlikely situation that the THAT chip doesn't come to market and our SSM2017s are finally exhausted some way down the line.

We've designed the 2017 out of all-new products in the past 18 months, so our reliance on the chip has been greatly reduced in any case.

As you can see, we have pre-planned and are fully able to continue manufacturing and supporting the VTC and any other product of ours that contains the 2017. The withdrawal of chips from production is a problem all pro audio manufacturers face, but we like to think that we cope with it in a professional manner.

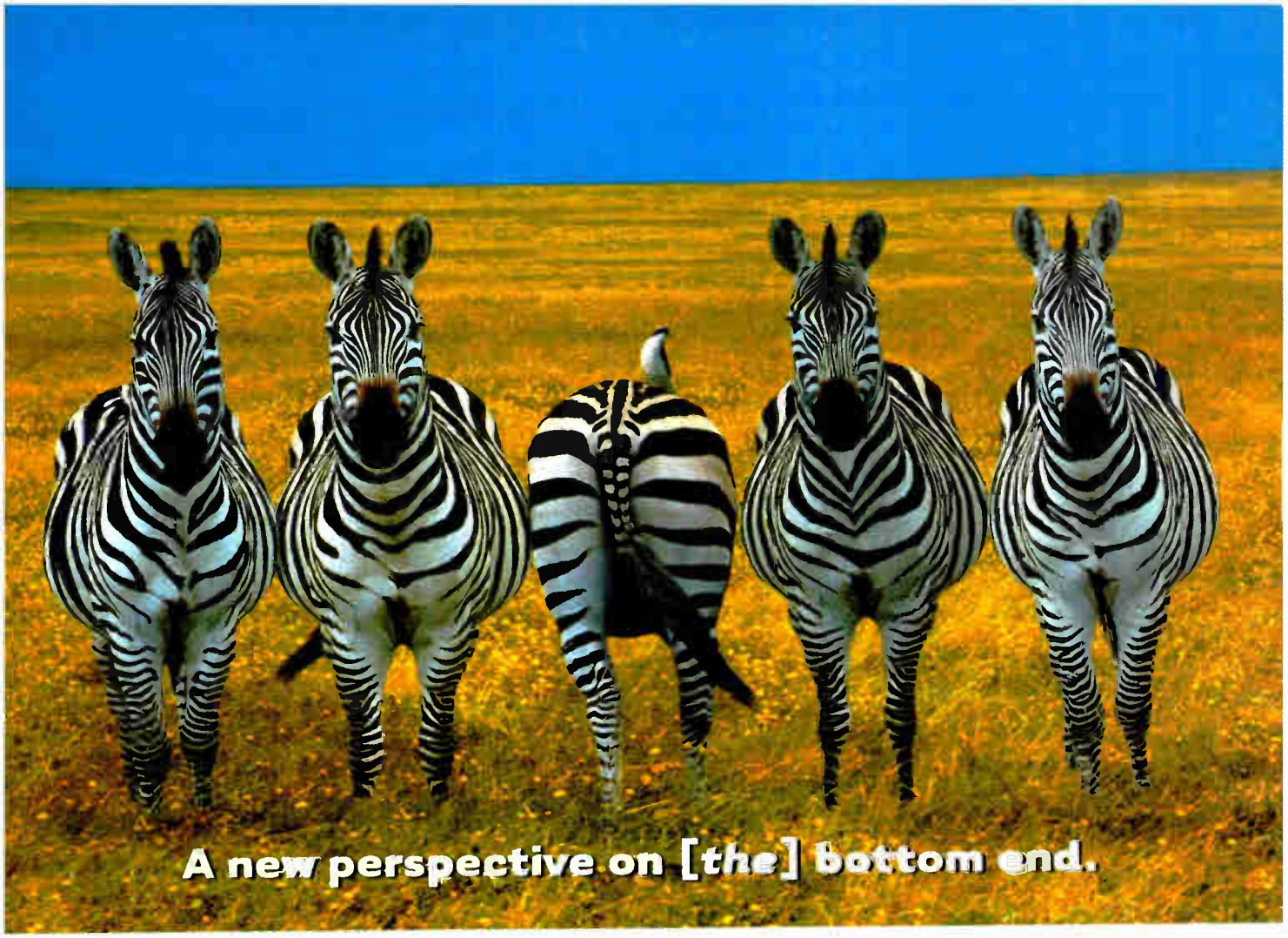
Howard Jones, sales and marketing manager
TLA Audio Ltd.

I just saw your letter to *Mix* magazine regarding the obsolescence of the SSM2017 mic preamp chip. A company called THAT Corporation, www.thatcorp.com, has a pin-for-pin replacement chip for the SSM2017, the THAT 1510. Also, an Analog Devices distributor's representative assured me Analog Devices will produce a new 2017 replacement, the SSM2019. I do not have a release date as of yet.

As an audio console manufacturer, we have lobbied hard to get Analog Devices to make a replacement because we have literally thousands of the SSM2017 in the field. Also, retooling multiple circuit cards is not an inexpensive proposition! Hope this information helps.

Paul Picard, technical support
AudioArts/Auditronics/Wheatstone
www.wheatstone.com

Send Feedback to *Mix*
mixeditorial@primediabusiness.com



Introducing *Laminar Spiral Enclosure*™ Technology: The new Genelec 7000 Series LSE Active Subwoofers.

The Truth - in black and white: a revolutionary, proprietary technology [*and shape*] that will forever change your expectations of what an accurate, multi-channel professional surround-sound monitoring environment should sound like. The new Genelec **7000 Series** consists of four (4) active subwoofers – painstakingly engineered to enhance the entire range of our active monitoring systems – from the award-winning **1029**'s right up to the formidable **1039**'s.

These new subwoofers look different for a very good reason: *Laminar Spiral Enclosure* technology. **LSE**™ is evident in the unique circular shape of the enclosures, identical in execution for the 8", 10", 12" & dual-driver 12" models. This radical design departure dramatically alters how high-level, low-frequency acoustic energy is delivered to virtually any critical-listening acoustic space.

The main benefit? The compromises inherent in traditional ported enclosures are now things of the past; the unrestricted *laminar flow* of low-frequency energy emanating from the rigid, tuned enclosures of the **7000 Series** is truly an extraordinary listening experience. When combined with the latest 6.1 electronic bass-management technology, Genelec *Laminar Spiral Enclosures* not only turn things around, they give the professional a whole new perspective on the meaning of superior performance.

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MACKIE TEAMS UP WITH UNIVERSAL AUDIO

Mackie Designs (Woodinville, Wash.) and Universal Audio (Santa Cruz, Calif.) have entered into a partnership in which Mackie will market and distribute a series of Universal Audio-developed, DSP-based software tools.

"We believe that by combining Universal Audio's engineering talents with Mackie's marketing and distribution capabilities, we will be able to provide even more useful and inventive tools to our customers," said Jamie Engen, Mackie's CEO.

The first UA-developed product to become part of the Mackie family will be the UAD-1 Powered Plug-Ins for Windows-based, VST-compatible software, including Cubase VST, Logic Audio, Nuendo and others. A Mac version that includes support for MOTU's Digital Performer will be available later this month.

Currently in limited distribution, Powered Plug-Ins will be available at Mackie dealers worldwide as the Mackie Powered Plug-Ins System ($995 U.S.), and will include all available Universal Audio-developed plug-ins and the UAD-1 PCI card.

For more, visit Mackie at www.mackie.com or Universal Audio at www.uaudio.com.

A stocking of plug-ins: Universal Audio's Bill Putnam (left) and Mackie's Engen

SADiE: 10 YEARS OF iNNOVATiVE DESiGN

It's been 10 years since SADiE (Nashville) released its first digital audio editing system, the Studio Audio Disc Editor, which is where the company got its name. Today, SADiE is one of the leading manufacturers of digital audio workstations, supporting virtually every application from broadcast, CD mastering and post, to new delivery formats such as SACD and DVD-A. SADiE was also one of the first DAW manufacturers to offer 24-bit/96kHz PCM sampling for recording, editing and mastering on DVD. Another first was seen last month, when SADiE became the first manufacturer to implement the new AES31 file-exchange standard.

AL AND DEE DEE: PARLEZ VOUS FRANÇAIS?

Legendary engineer/mixer Al Schmitt recently traveled to Paris to record the new album for noted jazz singer Dee Dee Bridgewater on the AMS Neve 88R analog console at **PLUS XXX STUDIOS**. "It was fabulous, and the board sounded great," Schmitt said. "It had a lot of punch. And I loved the preamps, the equalizers and especially the way the board is laid out. It's a real simple board, and it just sounds wonderful."

A REVAMPED MUSICTECH COLLEGE

The $3.6 million renovation and build-out of the new Musictech College of Music and Recording Arts in Saint Paul, Minn., officially opened on January 22, 2002. Its 60,000 square feet will more than double the recording, performing, production and teaching space the college once occupied in Minneapolis.

Located at the former Science Museum East Building (also known as the Arts & Science Center), the new Musictech College will contain a 300-seat auditorium, 10,000 square feet of recording studios, a music library, 12 listening stations, six production suites, 12 practice rooms and two state-of-the-art digital laboratories. An 8,000-square-foot student commons area and courtyard, built in the penthouse of the original Arts & Science building, will have an informal performance space for student musicians.

For more, visit www.musictech.com.

COMPILED BY SARAH BENZULY

TEC AWARDS SITE CHOSEN

The Mix Foundation for Excellence in Audio recently announced that the 18th Annual Technical Excellence & Creativity Awards will be held Sunday, October 6, 2002, at the Biltmore Hotel in Los Angeles. For ticket or sponsorship information, contact Karen Dunn at 925/939-6149 or KarenTEC@aol.com.

SCHOLARSHIP APPLICATIONS AVAILABLE

Applications are now available for the 2002 TEC Awards Scholarship Grant. For an application form, check www.tecawards.org, e-mail KarenTEC@aol.com or write to TEC Awards, 1547 Palos Verdes Mall, #294, Walnut Creek, CA 94596.

MUSIKMESSE 2002

Musikmesse/Pro Light and Sound 2002 returns to Frankfurt from March 13-17, 2002. Featuring more than 1,500 exhibitors showing the latest in musical instruments, live sound, DJ, lighting and recording technologies, Musikmesse is expected to draw some 90,000 visitors from dozens of countries worldwide. For more, surf to www.musikmesse.de.

MUSIC FOR THE KIDS

Inspired by the efforts to keep school music programs alive, Side Door Studios (Newark, Del.) donated hundreds of hours of recording time to area schools for their Fourth Annual School Recording Session Program. To encourage the students' musical ambitions, studio owner Fred Layaou invited local high school bands into Side Door to get a better look at the recording process.

Side Door Studio chief engineer Paul Janocha (seated, left) with high school students after a recording session.

"We know that today's music students are tomorrow's composers, music instructors and recording artists," commented Side Door's chief recording engineer, Paul Janocha. "One of the teachers wrote us: 'The experience was so rewarding for one of our young men that he has found the courage to apply to music school for college next year.'"

ON THE MOVE

Who: Courtney Spencer
What: owner, Praxis Marketing
Main Responsibilities: provide marketing and sales guidance to companies
Previous Lives:
- 1990-2001—VP, U.S. pro audio business unit (Sony)
- 1988-1990—VP of sales (WaveFrame)
- Late '60s-Late '70s, VP/general manager (Martin Audio/Video)
- First 15 years of his career in the studio, mostly as a producer and engineer in radio and commercial production

What I hope to achieve in this field: If I can help a couple of those companies find the right sales channel and marketing visibility, I will feel that I'm off to a good start.

If I could do any other profession, it would be: creative writing and advertising.

My best moment since working in pro audio was: launching the DMX-R100 at Sony. The R100 was a great example of factory people working closely with the American and European pro audio marketing groups to identify and address an industry need in a creative way.

The first concert I saw was: Mothers of Invention at a club in Greenwich Village. They spent the first half-hour clowning around, doing stuff like pulling dolls apart and spitting beer at each other, before they played any music.

Currently in my CD changer are: Lots of contemporary jazz including Pat Metheny, Chick Corea and Bob James, and a mix of pop and rock stuff including James Taylor, Alison Krauss, Lyle Lovett, Mark Knopfler and The Eagles.

The last great book I read was: *The Killer Angels* by Michael Shaara. It's a great account of the Battle of Gettysburg, and in a broader sense, the Civil War.

I enjoy....when I'm not in the office: Playing sports, especially baseball, with my 11-year-old son, tinkering with computers and my home theater system, reading and listening to music. I really like golf, but I plan to take a few more lessons before I inflict my game on my golf-playing friends again.

EVERYONE, RAISE YOUR GLASS

PHOTO: LISA ROY

From left, producer/engineer Critter, Sean Beavan, manager Shannon O'Shea and Michael Bradford at the recent SOS Management bash at Dominick's (Los Angeles) to celebrate Beavan's and Bradford's birthdays.

CURRENT

MIX LOOKS BACK

MIX 25 1977-2002

NUMBER ONE ALBUM

A Star is Born *soundtrack (featuring Barbra Streisand and Kris Kristofferson). Producers: Phil Ramone, Barbra Streisand. Engineers: Phil Ramone, Tom Vicari, Dan Wallin. Studio: A&M Recording Studios.*

For *Mix*'s 25th anniversary this year, we begin looking back at where we started. Here are the Number One albums and singles from *Billboard*, March 1977, with special props to the engineers, producers and studios who make the magic.

NUMBER ONE SINGLES

Daryl Hall & John Oates' "Rich Girl." *Producers: Christopher Bond, John Snyder. Engineers: John Arrias, Joe Lopes, John Mills, Armin Steiner.*

"Evergreen" (love theme from A Star is Born). *Producers: Phil Ramone, Barbra Streisand. Engineers: Phil Ramone, Tom Vicari, Dan Wallin. Studio: A&M Recording Studios.*

ROLAND TAKES STOCK IN FENDER

Fender Musical Instruments Corporation announced the recent sale of holdings in the company. In order to reward its founding shareholders of more than 16 years, Fender has recapitalized a minority portion of its common stock to allow for a partial payment to those who helped finance the buyout of the company from CBS in 1985.

New financial partners include Roland Corporation U.S., the Los Angeles-based musical instrument company with whom Fender has previously partnered on co-designed products, and Weston Presidio, a private equity firm based out of San Francisco.

NOTES FROM THE NET

Unable to keep a good thing down: **Napster** is back up and running—this time in beta form. Close to 20,000 volunteers are beginning to access some 110,000 tracks available on the new Napster service for $5 or $10 a month, for 50 downloads. The catch: The available tracks are only from indie labels because Napster has yet to strike deals with the Big 5. (The major labels are still suing Napster for copyright infringement. Coincidentally, Federal Judge Marilyn Hall Patel has agreed to a one-month delay in the lawsuit, an indication that a settlement is close at hand. Stay tuned.) Unlike other services that launched in late December, the beta version allows the downloaded music to be burned to CD or transferred to a portable player. Previously, Napster had agreed to license the MusicNet service (EMI, BMG, Warner Bros. and RealNetworks), but has changed its mind. According to Napster CEO Konrad Hilbers: "Why run their system when we have our own?"

In other online news, Listen.com has beefed up its own music download service **Rhapsody**, signing non-exclusive agreements with EMI and BMG (ironically, the same companies that are running their own service, MusicNet). This agreement came soon after Listen.com announced that they have reached a publishing rights agreement with The Harry Fox Agency, the licensing arm of the National Music Publishers' Association.

Industry News

Sukeo Tsukada

Chris Walsh

Andrew Wild

Former digital media executive at ReplayTV/SonicBlue Corporation **Thomas W. Carhart** joins **Qdesign** (Vancouver, BC) as president and CEO...Joining Otari Corporation in 1970 and developing **Otari Corporation of America** (Canoga Park, CA) shortly thereafter, **Sukeo Tsukada** is the new president of OCA. In other Otari news, Southeast regional sales manager **John Spencer** was promoted to VP of sales and marketing, and **John Sarappo** is the new marketing coordinator...**TGI North America** (Kitchener, Ontario) added **Chris Walsh** to its team as product specialist for DPA Microphones and Tannoy Studio Monitors, while **Bruce Myers** was named general manager of field operations for TGI Professional...**Mackie Designs** (Woodinville, WA) promoted **Ivan Schwartz** to corporate director of global sound reinforcement product and market development, where he will oversee the newly formed SR Market Development team...**Audio-Technica** (Stow, OH) announced many new appointments: **Gary Boss** was named marketing director for the MI, studio, live sound, fixed installation and consumer audio markets; **Michael Edwards** was appointed to product manager for wired microphones and headphones; **Bob Green** is the new product manager for wireless and circuitry products; and **Jeff Simcox** holds the marketing communications director position...German-based manufacturer **Salzbrenner Stagetec Mediagroup GmbH** has tapped the talents of pro audio veteran **Terry Marshall** to head the newly created North American sales division, based in L.A., to be called Salzbrenner Stagetec Mediagroup Inc....With over 25 years of experience in the industry, **Andrew Wild** has been appointed VP of marketing for **Euphonix** (Palo Alto, CA)...New representative deals: **George Massenburg Labs'** (Las Vegas) products will be distributed in the U.S. by **Transamerica Audio Group** (Las Vegas); **SADiE** (Nashville) chose **Westlake Audio** (Los Angeles) as an authorized sales representative; and **Herman Electronics** (Miami) will distribute **ADC's** (Eden Prairie, MN) full line of broadcast products.

Send your "Current" news to Sarah Benzuly at sbenzuly@primediabusiness.com.

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Eventide's Eclipse™ Harmonizer® Brand Effects Processor will be the "newest" state-of-the-art effects box for years to come. While other manufacturers obsolete their "flavor of the week" effects boxes with new models every year or so, Eventide Harmonizer effects processors have always enjoyed incredible longevity—several models have been produced continuously for a decade or longer. No wonder Eventide has been the choice of professionals for 30 years.

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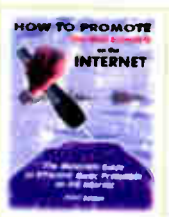
BOOK CORNER

The PC-DAW Book: How to Build, Optimize and Maintain a PC-Based Digital Audio Workstation, by J.R. Stevens, covers everything from component selection and hardware issues to specific setting changes in the various Windows operating systems. Retail: $24.95; a downloadable version is available for $16.95 at www.studiogem.com.

Muska and Lipman Pubishing's *ACID Power!*, written by tech writer David E. Franks, teaches readers how to use ACID and optimize their own artistic skills. Price: $29.95. Other *Power!* books available include *Home Recording Power!* by Ben Milstead ($29.95), *Cubase Power!* by musician/composer Robert Guerin ($23.95) and *SONAR Power!* by Scott Garrigus ($29.95). Visit www.muskalipman.com for more.

CD Recordable Solutions by Martin C. Brown (Muska & Lipman Publishing) teaches users how to burn music, data and video CDs using a Windows, Mac or Linux OS, as well as the A-to-Zs on CD-R, CD-RW and DVD-compatible CDs, including backup, archiving, organization, media catalogs and testing. Price: $29.95.



How To Promote Your Music on the Internet: 2002 Edition by David Nevue is a quarterly, how-to guide on making money off your music on the Internet, including details on successfully using the MP3 format and search engines. A new chapter explores the "best places to sell, promote and distribute your music online." Price: $17.95, plus shipping and handling. Available at www.MusicBizAcademy.com.

New from Berklee Press, *Finale: An Easy Guide to Music Notation* provides a step-by-step exploration of the music notation program's capabilities and applications. Written by music educator Thomas E. Rudolph and producer/composer Vincent A. Leonard Jr., the book comes with a Mac- and Windows-compatible CD-ROM. Price: $59.95. Visit www.berkleepress.com for ordering information.

KARL BISCHOF, 1940-2001

Karl Bischof, VP and technical director at Bernie Grundman Mastering, died on November 17, 2001, after a long battle with cancer.

Bischof's first pro audio gig after serving in the military was as a technician for Stereodyne Tape Duplicating. In 1971, he met Tom May, then head of A&M Recording Studios in Hollywood, and joined the technician staff, where he was soon heading design teams to build custom devices, as well as redesigning and improving existing equipment, including a custom 32-channel mixing console in 1977. In 1979, Bischof's team designed and built three mastering consoles, and in 1980, he became technical director of the A&M maintenance staff.

In 1981, Bischof teamed up with Bernie Grundman, who was also working at A&M, and built their first mastering console in Bischof's garage at night and on weekends; it took three years to complete. According to Grundman, this persistent effort was indicative of Karl's personality, a man who strove to improve the performance and flexibility of the studio.

He is survived by his wife, Joannie, a sister in Michigan, and his kitty, Abigail.

DAVID KAHNE, M-POWERED.

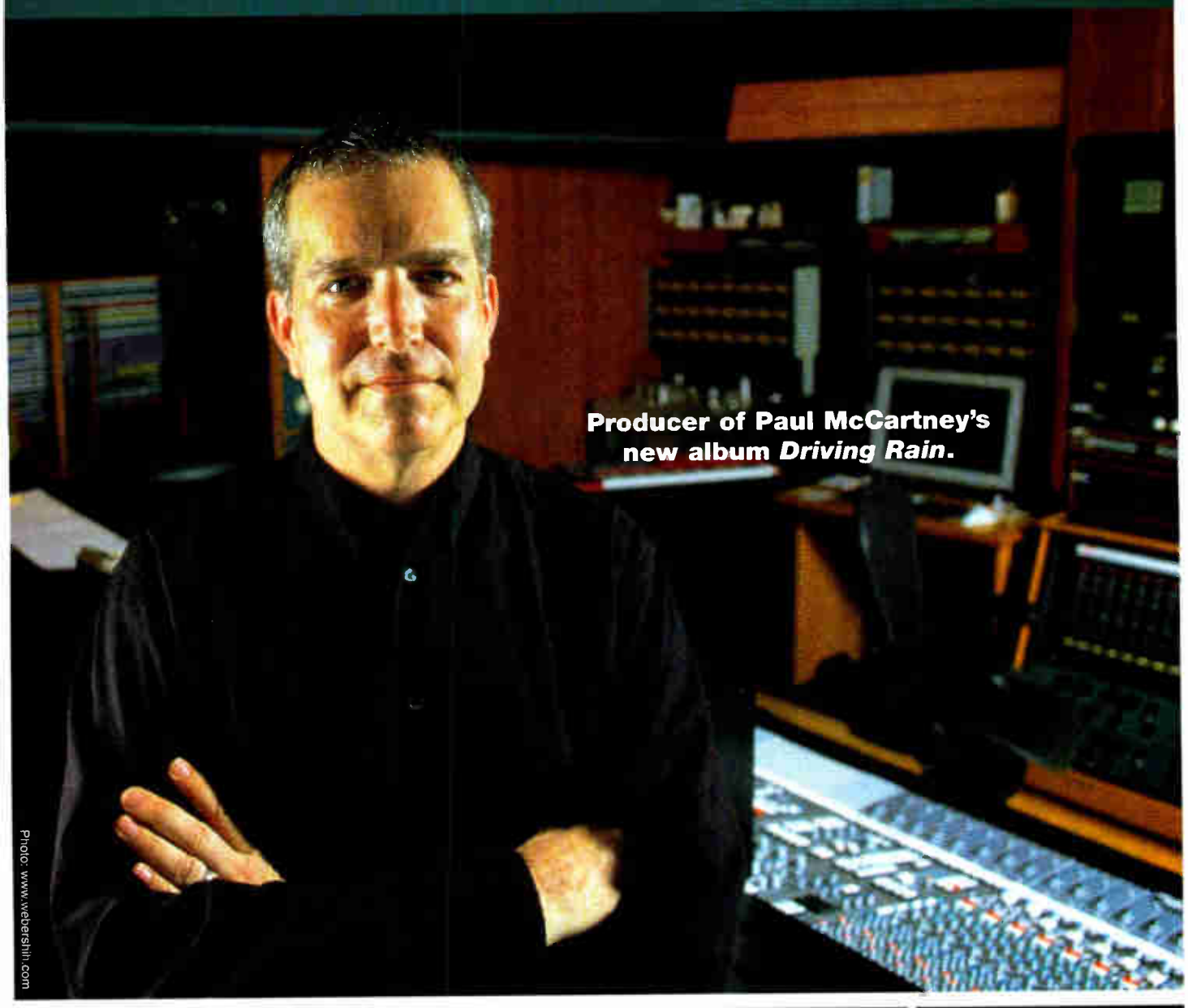


Photo: www.webershin.com

David Kahne, head of Warner Bros A&R, is one of the most trusted producer/engineers in the music business. In fact, David's ears are so good that it seems everyone wants to borrow them. Paul McCartney did for his latest recording, *Driving Rain*. David has also loaned his lobes to the likes of Shawn Colvin, Sublime, K.D. Lang, Fishbone, Soul Coughing, The Bangles, Sugar Ray, and Matthew Sweet - just to name a few.

Needless to say, people take notice of David's choice of audio cards. **David uses the M-Audio Delta 1010 audio card in his studio.** The critically acclaimed Delta 1010 has become a staple item in pro studios because of its ability to thrive in so many environments. From Mac to PC, from audio/sequencing programs to soft synths and soft samplers, the Delta 1010 is the card increasingly found behind the scenes. (The slim price tag helps, too.)

All of M-Audio's Delta audio cards offer low-latency drivers, clearly superior fidelity, and compatibility with today's most demanding audio applications. Whatever your needs, M-Audio makes a card that fits your budget and exceeds your expectations of what a digital audio card can be. A Delta card and your favorite program will form a system that challenges everything your ears know about professional-quality sound.

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Cherokee Studios

By Maureen Droney

West Hollywood's five-room Cherokee Studios has a rich 30-year history, a thriving present and a promising future. Its owners, three musician/engineer/producers who also happen to be brothers, have always bucked trends, from building—way back in the day—one of the first home studios, to the distinctive equipment choices that they've made over the years. Along the way, Cherokee has developed a loyal and diverse clientele that includes the free-thinking, independent sort, like filmmaker/composer John Carpenter, musician/spoken-word artist Henry Rollins and the enigmatic Morrissey.

Dee, Bruce and Joe Robb started out as performing artists, first backing up Del Shannon, then on their own as The Robbs. In the early '70s, the three were recording for ABC Dunhill and living on a horse ranch in rural Chatsworth, when, with audiophile extraordinaire Roger Nichols as technical mentor, they got their introduction to the studio business.

"We started playing country rock-style music, changed the band's name to Cherokee, and were preparing for an album," recalls Dee Robb. "But at the time, ABC Dunhill's studio was always booked. We couldn't get in to do our demos. Roger, who was chief technical engineer at ABC, had become a good friend and was hanging out at the ranch a lot. He suggested that we buy some recording gear and put it in the barn. Then he found us an Ampex 4-track, and that's how it started."

The studio made the gradual progression from four to 24 tracks, and the Robbs made the gradual progression into producing and engineering for other artists, beginning with their old friend Del Shannon, who lived nearby and whose single "What's the Matter Baby" became the first non-Robb recording made at the studio.

Not long after, Nichols brought Steely Dan to the ranch to record what became their pop masterpiece, *Pretzel Logic*. "At that point, we knew we were in the studio business," Robb says with a laugh. "It just kind of happened. For example, we never named the studio. Our friends just referred to it as Cherokee's Ranch. And we never made a decision to stop performing as a band. We just realized that we were in the studio all the time instead of touring. After *Pretzel*, I worked with Rick Nelson and ended up producing him, then Jeff Lynne and ELO were working at the studio. We had some fairly serious clients, and we started looking for a bigger facility."

PHOTO: GENE HSU

Bruce Robb, Susan Donaldsen and Dee Robb in front of some of Cherokee's Gold and Platinum.

In January 1975, Cherokee took over what had been MGM's studios on Fairfax Boulevard, a block north of the Melrose District, where Studio 1, the complex's largest, was the first ever Tom Hidley-designed room. Meanwhile, the brothers became enamored with a certain kind of British sound that directed them to Trident Studios in London, then the home of custom, in-house built consoles. A dialog began between Cherokee and Trident, and at the end of '75, the Robbs took possession of the first Trident A-Range desks to hit America.

Artists including Rod Stewart, David Bowie and Frank Sinatra made now-classic records on that 80-input A-Range, which currently resides in Cherokee's Studio 3. Two other versions of the Trident followed in Studio 1. It wasn't until 2001 that the Robbs found a console that they thought could take their place: an 80-channel, all-discrete API Legacy Plus, with dual inputs and full dynamics, four direct box modules, 12 sends per channel, three stereo buses and a stereo compressor, with faders and switches automated by API Mix Plus.

"We brought in channel strips from virtually every console out there," says Robb, "and did blind A/B tests with live program material. We wanted a pristine signal path with as little phase degradation as possible, so we did it very simple. The only console that excited us was the API. And the great thing about it is that the Legacy Plus, besides having a great sound, has the features the A-Range didn't. We kept the high sonic standards and gained functionality, and we're thrilled to have achieved that."

Another major upgrade ensued at the facility in 2001. Studio 2 was completely redesigned, from the ground up, by George Augspurger for 5.1 surround capability and now features an SSL 4096 G Plus console. Studio 4 houses a second custom 48-input Trident A-Range with a 24-channel sidecar, and Studio 5, also a 5.1 room, features an Otari Advanta 96-channel digital console. Monitoring in all studios is Augspurger-designed with JBL components. Both analog and digital (RADAR and Pro Tools) recording is available, and Cherokee's gear and microphone lists—as long as one might expect from a studio with a 30-year history—feature both vintage and new brands.

Cherokee's client list continues to be cross-genre. Past credits read like a Who's Who of the industry, including Jane's Addiction, Aerosmith, Devo, The Go-Go's, Dave Matthews Band, Lenny Kravitz, Public Enemy, Cypress Hill, Diana Ross and Al Green. Recent projects have included producers Matt Hyde with Slayer, Roy Thomas Baker with Guns N' Roses, Walter "A" Afanasieff with Robi Rosa, Toby Wright with Tantric, and producer/engineer Andy Johns with The Cult. ■

ACCURACY...NOW AVAILABLE IN SMALL, MEDIUM AND LARGE.

Yamaha's long-standing reputation for accurate, high quality studio monitors continues with the recently expanded MSP Monitor Series. The new 20-watt MSP3s are perfect for multimedia systems or keyboard rigs, while the bi-amped MSP5s (40 watts for mid/lows, 27 watts for tweeter) and MSP10s (120 watts for mids/lows, 60 watts for the tweeter) set the standard for small and large studios. These speakers also boast versatile EQ controls, tuned bass reflex designs and premium Yamaha components. Put your trust in Yamaha MSP monitors – they tell it like it is. Once again, Yamaha gives you more for less.

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BY STEPHEN ST.CROIX

LCD! DLP!

Let's Fire 'Em Up, and Then We'll See

ILLUSTRATION: GORDON STUDER

I love it when a plan comes together. Yup, when me and Mr. T see that compound blowing up in the rearview mirror as we drive away with the million bucks and the rescued girl, it's a great feeling.

But it doesn't always happen that way. And *this* month's column is one of those times. I had a plan, a straightforward comparison of two large-scale display machines, and I expected a clear and obvious winner and loser. But no such luck.

Instead, the deeper I dug, the more questions arose, and the fewer real answers were found. I heard a lot of, "Wow, nobody's ever tried *that* before," and, "No one's ever asked *that* before."

And why, you might ask, am I even looking at display devices? Well, if there are any of you out there who still do *only* music, have a look at the numbers for audio for video and film...I expanded my music-only studio to include film when I landed a huge remastering contract with MGM long ago (starting with *The Wizard of Oz*). Best move I ever made.

The last time I took an in-depth look at video projectors, the battle was between LCD and CRT. For me, 16:9 LCD technology emerged the winner for studio applications for many reasons, such as its capability to zoom and re-focus in seconds, and its outstanding stability, small size, light weight, and relative immunity to irrational subwoofer levels and nuclear-induced EMPs.

The older, larger and incredibly more expensive CRT systems did have one minor point going for them: The picture quality was dramatically superior. For a few days, anyway. But the constant need for refocusing, hours of reconverging and, worst of all, the uneven burn-in of the phosphors from projecting 4:3 on a 16:9 system eventually disenchanted me to the point that I made the decision that I would never again use a three-gun phosphor projector. But they had no visible pixels, and with a nice little $35,000 line doubler stuck in front, they did look a lot like film.

But there are new developments and new technologies now, not to mention an endless supply of new opinions. So, I thought it might be time to look again.

960L

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THE RULES OF THE GAME

It seems that what we really want for our control rooms is actually quite similar to the types of systems that are targeted for high-end home theaters. Of course, we want the best possible image—the brightest and most accurate—the most stable and quiet A/D converters, and the lowest possible fan noise. And any projector must do all the HD formats that we might expect to need.

We want low maintenance, low operating costs and fast warm-up. We want them to help us get our work done and to impress our clients. And it wouldn't be a bad thing if they didn't cost a hundred grand, as well.

So (in spite of my constant bitching in this column about the general tech trend of quality being traded for feature lists), last time I chose to pass on the best picture in favor of a more convenient, manageable, stable system that cost one-third as much. After all, we are not doing color correction on these projectors; we are working on audio for video or film.

THE PLAYERS OF THE GAME

So, now we have the aging CRT, the established LCD in all its various transmissive, reflective and transflective flavors, the mysterious and misunderstood D-ILA, and the novel, toylike silliness of DLP.

I went everywhere I could to see the most recent projectors, and I found two dealerships that clearly stood out as exceptional. I owe both Gramophone and Silver Screen here in Baltimore big time for many, many hours of expert help and infinite tolerance. Fly to Baltimore. Go to these places, buy stuff. Do *not* say you know me; they will surely add 10% if you do.

Anyway, while residing at these places, I asked annoying question after annoying question, plugged stuff into stuff that wasn't really meant to be plugged into that stuff, called manufacturers and compiled a book of notes. Then I read reviews to see if I had lost touch, and made more comparisons and calls. Then I brought projectors into my studio for the real torture tests, and ended up with the following education:

As before, CRTs are warm and quite film-like, but absolutely *not* for me. Like their little cousins, the consumer rear-projection TVs, these things are just way too touchy for me. Keep in mind that the main attraction for me was that they didn't have visible pixels—a part of the reason for their film-like image. But now there is another technology that has no visible pixels!

LCD, long my favorite, has been improving each year as well. Contrast has been improving, and color linearity and accuracy are better with each new model. And resolution increases every year. Definitely in the finals.

D-ILA? Well, this freak subset of LCD tech sports some serious performance specs. These systems are capable of handling huge amounts of light without melting, so, sure enough, they have insanely bright bulbs and light outputs hitting *thousands* of ANSI lumens, as opposed to the sub-1k brightness of most consumer projectors. But this comes at a price. They are large, very noisy, quite expensive, and the bulbs are *not* cheap.

So, while my choice for large arena concert effects and movies (they stack three or four of them up to get insane brightness for screens the size of apartment buildings) might be D-ILA, I'll pass for my studio...for now.

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WHAT'S LEFT, SMOKE & MIRRORS?

Well, actually, yes, those silly DLP systems. For those who may not know, this is certainly the most amusing of all existing projector technologies. When I first heard about it several years ago, I thought the technology was insane and destined for low-end novelty projectors. (I don't really know what a novelty projector might be; I just made it up.)

As near as I can tell, Texas Instruments had some really powerful psychotropic agent introduced to their air or water supply one day several years ago. As a result, some of the younger engineers decided that they would try to develop an imaging chip that used a lot of little tiny mirrors, on tiny little hinges, that would flip around wildly and reflect light to make a projector. Okay. I have no idea how they planned to make these little mirrors last more than a half-hour, but it seems that they did.

For those who might actually care, there is a story that TI developed a nano-motor as a research project, and then sat around trying to figure out what they could do with such a thing once it worked. I guess one of the engineers wanted to see Buckaroo Bonzai really, really big, so he suggested putting thousands of little mirrors on a chip, each driven by one of these micro-motors. And so they did.

When I first saw a DLP projector, I was *not* impressed. I believe the proper technical term was that it sucked. Lots of epileptic seizure-inducing flicker, almost no color, and what color that was there was so bogus that you were actually kind of grateful there wasn't so much color after all.

But I stuck with it and saw many more, in private showings, where I was lured with promises of major breakthroughs, and...nah.

However, for this month's column, I have spent a great deal of time with the newest DLPs, and they are getting very interesting.

The potential superiority of this technology is that all the light is bounced off these mirrors. No light is lost traveling through light-absorbing LCD soup. Additionally, these little mirrors almost touch each other, meaning that for the first time, it is actually possible to have virtually no visible pixels (no "screen door" effect).

LCDs need addressing electrodes, which run between each pixel and are clearly visible onscreen as gray boxes around every pixel. These electrodes are nonexistent in DLP technology. All the hard work is done *behind* the mirrors, behind the scene as it were. Somehow that seems appropriate.

HOW DID IT GET SO HARD TO PICK?

Easy. I made the mistake of actually comparing machines myself, for two weeks.

This started when I happened upon a new DLP projector that didn't give me a headache—the very first one that didn't, by the way. You see, lower-cost consumer DLPs have a unique limitation that is somewhat problematic.

Though it is common practice to use three LCD panels in a projector, with very sharp roll-off dichromatic RGB color filters, the whole point of capitalizing on the low-cost, low-size potential of DLP is best realized if a *single* chip is used.

So how does a DLP do color? By stepping backward—down the ladder of technical evolution. They use a physical spinning color wheel! No, really! A spinning wheel that has colored gels!

Two of the DLPs I found use 10-bit processing, and the difference is night and day!

Now, keep in mind that three-chip DLPs are available, but they are big-ticket items, aimed at the D-ILA market. And they are *very* impressive.

But back to the real world of something that you might actually buy for your control room. For these single-chip units, only one color can be shown at a time. So for each frame, there are three projections: red, green and blue. We're not even getting into interlace or progressive here. And we are going to forget that last year's models had four colors, adding white (clear) to increase apparent brightness, at the cost of color fidelity.

Why is this spinning wheel such a bad thing? If you should happen to move your head or eyes rapidly, or if a high-contrast light/dark transition moves rapidly in the projected image, then you can, and will, see the colors separate. Most disconcerting, but one friend of mine actually likes the effect and is attracted to the technology for that reason. I have no clue why, especially when you consider that he has *no* drug history whatsoever.

The DLP that made me look again uses a newer, faster TI chip that allows spinning The Wheel of Stupidity at a higher rate, so that instead of showing each color once per frame, each is shown five times. For those who care, the "5x" wheel that is used today actually spins at 2.5x, and has six gels (RGB and RGB again) instead of three.

This does, in fact, reduce the color/time artifacts to a barely acceptable, but acceptable nonetheless, level. Please note that I am not talking about retinal persistence (flicker-fusion) here, but a *new* kind of temporal-chroma artifact. Static or slow-moving material does not reveal this artifact, as it is masked by retinal retention.

And so, though I had intended a shoot-out with actual winners and losers, the technologies themselves soon emerged as the true issue. Add to this the fact that new models are being revealed at CES as I type these very words, and I decided to offer a technology comparison this month, and my actual choice (backed up with an actual purchase) later.

AND WE LEARNED...

Well, here's what I saw, anyway. Remember, at this point we have a technology comparison, not necessarily a projector vs. projector comparison, though all observations were made using commercially available models.

It came down to DLP vs. LCD, with a very carefully set up Sony conventional CRT direct-view monitor as my reference, all fed identical buffered, compensated and equalized S-Video. Component and RGB produced predictable improvements, as you would imagine.

DLP has shocking detail, and no visible pixels. The high-speed color-wheel units work well to hide their shame 95% of the time. They don't look like film. There is *no*, there *can be* no, mis-convergence. They blow your face off. They are *very* punchy. Native res is getting into true HD territory, and some of the internal line-doublers even work.

LCD is softer and very film-like now, and in four hours, I was actually able to set one of the popular $15k units up to match my Sony direct view's color! The LCDs had much more color, much better color linearity and superior color in shadows, but they don't even try to make black, and due to the elaborate trickery employed to attempt a bright white, colors blow out and become insane in the brightest highlights. LCDs are noticeably warmer and more organic-feeling com-

—CONTINUED ON PAGE 190

Kill Your Mouse

No, no, no . . . we're not advocating violence against defenseless little animals (if they were *rats*, maybe . . .). But we are suggesting that if you're making music with computers, you need to jump on the EZbus—and make the process way more simple, and way more *fun*.

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EVENT ELECTRONICS

BY PAUL D. LEHRMAN

I Ought to Have My Head Examined

Adventures in Ontological Existentialism

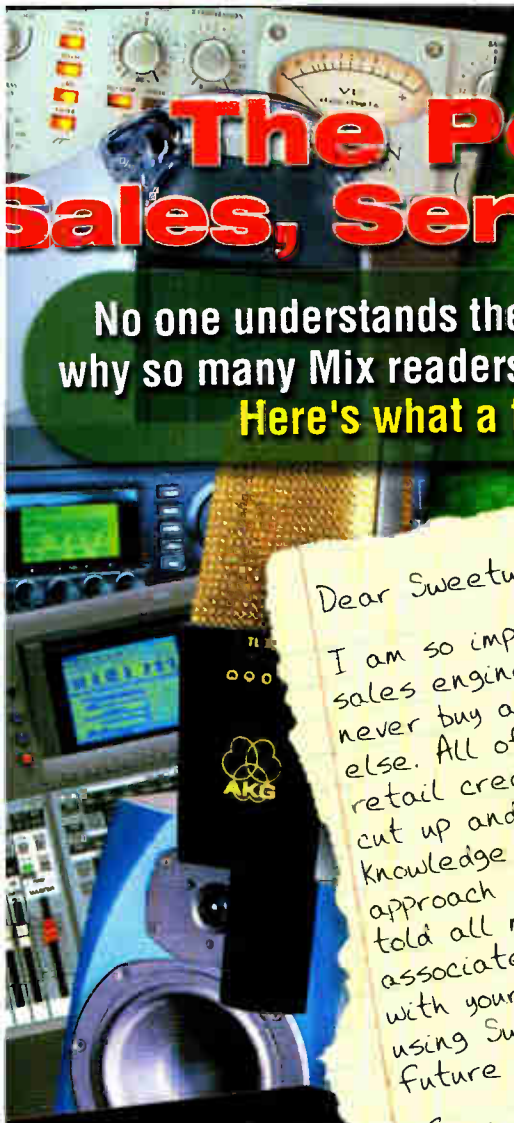
ILLUSTRATION MELINDA BECK

What do you call it when you hear noises that aren't really there? No, I'm not talking about what happens when you drink too much, or when all that LSD you swallowed years ago flashes back at you. I'm talking about the whistles, rings, whooshing sounds and other aural artifacts that are associated with a head injury, high blood pressure, or taking certain medications (like aspirin), or hearing damage. It's the condition known as "tinnitus," which doctors like to pronounce "TIN-uh-tis," while the rest of the world says "tin-EYE-tis." With tinnitus, the ears seem to be picking up sounds that don't exist externally. It takes many forms and has many, many causes. There was an excellent article on the subject by Bob McCarthy in the January 2001 *Mix*, and if you're interested in the subject, you should go back and take a look at it (of course, it's on mixonline.com).

About a year ago, all of a sudden I got *very* interested in it, because all of a sudden I got it. And I also got pretty scared.

For most of my post-adolescent life, I was quite sure I had escaped the fate of so many of my fellow '60s and '70s rock 'n' rollers, managing to avoid any damage to my hearing from years of playing in and listening to bands that were, let's face it, too damn loud. These days, at the levels I typically listen to music, both for pleasure and for business, it seems unlikely that I'm going to do anything further to screw up my ears. The bulk of my studio work is film scoring, and I usually work at relatively quiet levels, because I figure that's the way it's going to end up anyway when the mixing guys are done with it.

But about a year ago, I had a chance to do a score for an old silent film, and a pretty raucous score it was. I spent several days on it, monitoring at uncharacteristically loud levels. One day, after a few hours of sit-



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Mark De Souza

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ting in one position, my back started to hurt a bit, so I did what I always do under such circumstances: I got up, took a long stretch and walked over to the bathroom to get a couple of ibuprofen. That night, before I went to bed, I popped a couple more of the pills, just to make sure I wouldn't have trouble sitting through the next day's session.

Imagine my surprise when I awoke in the morning and discovered my ears were ringing. Well, actually they weren't ringing, but something inside of them seemed to be. It sounded like a sine wave generator up at around 8 kHz or so, and it was in both ears and quite constant. Imagine my further surprise when the ringing lasted all day and into the next. Whenever this happened to me before—usually because I was at a really long, loud concert, without any ear protection, something I haven't done in years—it never lasted more than a couple of hours.

Was it the ibuprofen, which, like aspirin, can cause a ringing in the ears, or was it the unusually high levels that I'd been listening to? Or was it the combination of the two or some other medications I had been taking? But the real question, the one lurking underneath all the others, was: Had I done something to myself that had permanently damaged my hearing?

Let's step back a minute. Like most folks past 30, especially men, my hearing is not as acute as it once was. When I was working in the electronic music lab in college, I would often test myself, seeing how high I could get the old Heathkit oscillator to go (without looking at the dial) before I couldn't hear it any longer. It was usually, I was proud to see when I turned around, up around 22 to 23 kHz. When I worked in radio a few years later, I was the only guy in the place who could hear the 20kHz track on the Magnetic Reference Laboratory Reproducer Test Tape. And for a long time, I could walk into any room—heck, any house—and tell you if a television set was on, because I could hear the 15,750kHz whistle that the flyback transformer made.

But as we get older, our high-frequency hearing drops off. It's normally an extremely gradual thing, so we don't notice it. One day in the '80s, during a period when I was reviewing a lot of high-end recordings for consumer magazines, I was checking out my system with a test CD and discovered, to my dismay, that I couldn't hear the 20kHz band. A few years later, I realized that the only way I could tell if a TV set in a room was on was to look at it. And for some reason, I can't hear my wife as well as I used to when she shouts from her office on one end of the house to my office on the other end. I don't think it's because our house is growing bigger.

Fortunately, I really haven't had too much trouble resigning myself to the fact that, like sliding head-first into home, diving from the 5-meter board or hitchhiking up the East Coast, hearing 20 kHz was just one of those things I was never going to do again. My hearing *perception*, on the other hand, seems to have improved over the years, which makes sense. Although being able to hear high frequencies is certainly an important part of it, aural perception is very much a product of knowledge, smarts and experience, which is why there are plenty of guys well into their '60s who are still great mixing engineers. Maybe I can't hear the sampling clock on a CD player, but I can still tell you who's playing the wrong note in a 20-piece big band, or at what bar the drum-

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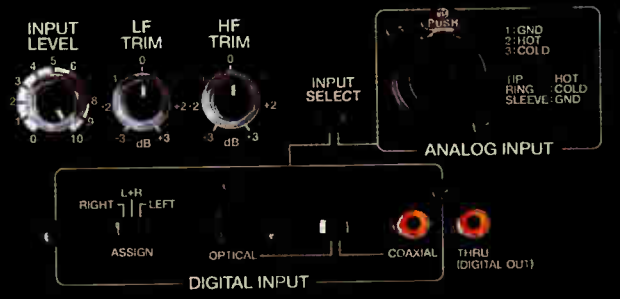

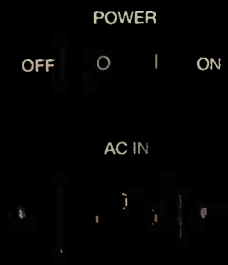

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mer is coming in just a hair late, or exactly where to set the mid-band EQ to bring the vocal up out of the mud. And I think I can do all of these things a lot better than when I was younger.

So you can see why I might be terrified when the sudden noise in my ears wouldn't go away. After the second day, I called my primary-care doctor, and he said it was probably the fault of the ibuprofen and the noise would go away in a few days. After a week, when it was still going strong, I called another doctor, a pharmacologist. She said it probably wasn't the drugs, but the result of all that loud music I'd been listening too, and if I was lucky, it would go away in a few more days.

But it didn't. After two weeks, I was beginning to get really nervous. I started stuffing my ears with cotton whenever we went to hear any amplified music, which made me feel worse, because the music sounded so awful and the ringing actually seemed louder. Then I started plugging my ears whenever I got into the car. A fire engine would go by and I'd put my head down between my knees as if I was expecting a bomb to drop. After a month, my wife was ready to kick me out of the house.

I sent an e-mail to the Hearing Education and Awareness Foundation in Los Angeles, a group that specializes in treating musicians with hearing problems, and also happens to be one of the organizations that benefits from the TEC Awards banquet and other Mix Foundation activities. It has a great Website (hearnet.org) that lists affiliated hearing specialists all over the country. Unfortunately, there's no one on that list less than 100 miles from me. Fortunately, Kathy Peck, one of the two founders of the organization, e-mailed me back the same day and gave me the name of an audiologist at the Massachusetts Eye & Ear Infirmary, which (except in rush hour) is only about 15 minutes from my house.

I got an appointment right away (mid-afternoon) and met Dr. Christopher Halpin, a pleasant fellow around my age, who, as it turned out, was also an electronic music freak when he was in college. In between feeding me sine waves, recorded speech and various other types of noises through a pair of heavy headphones, he and I had a grand time talking about the bad old days of drifting oscillators, finicky 16-step sequencers, lousy speakers and roaring EMT plate reverbs.

Chris gave me a complete workup, and when it was over, he handed me a sheet of paper with the results. "Hearing is normal through 3 kHz," it read, with "a very mild symmetric sensory loss above that." "Typical for a man your age," he said. "You're right in the middle of the range."

The graph he plotted for me, with 1 kHz at zero, went down 15 dB at 4 kHz, 20 dB at 8 kHz, and 50 dB at 12.5 kHz. That seemed like quite a drop-off, and nobody I know would tolerate a microphone that did that, but he said it was perfectly normal for human ears. "What about above 12.5k?" I asked him. "Oh, we don't measure that," he replied, "because there's no way for us to specify a sound pressure level as a reference point. At those frequencies, the waveforms get affected by the construction of the ear itself: You can get standing waves as small as the ear canal. Since everyone's ears are different, there's no way to tell objectively what's going on." This took me rather by surprise, but I had more important issues to deal with.

> Maybe I can't hear the sampling clock on a CD player, but I can still tell you who's playing the wrong note in a 20-piece big band.

Like, what the heck was causing my tinnitus? Chris' reply was that, while he couldn't tell what was causing it, he was pretty certain that it was not caused by my recent studio sessions. "If you've been listening for years and years at loud levels, I'd say that could be a factor, but one loud mixdown session isn't going to do it. Something like that might cause a temporary threshold loss, and maybe a ringing, which recovers in a couple of days." Decades' worth of high SPLs, he explained, could damage the cilia, the frequency-sensitive, hair-like nerve endings that serve as our personal D/A converters; they literally break off. But that wasn't my problem. If I did have any hearing loss, and it wasn't at all clear if I did, it was more than likely due to genetic factors. My grandfather, after all, was stone deaf by the time he was 50. "But none of these factors are strongly related to tinnitus," Chris said as he shook his head. "Really, tinnitus is not an ear thing at all—it's a phantom percept."

After I gave him a hug, he suggested that if I wanted to learn more about tinnitus, and maybe pin down the cause, I should make an appointment in the same hospital with Dr. Robert Levine, an otoneurologist ("oto" means "ear"), who is recognized as one of the world's tinnitus experts. Before I left the clinic, I bought a pair of musician's earplugs for $25 that he recommended. Now I didn't have to carry cotton balls around with me, and I could go into a club and still hear the music, without worrying about frying my cilia.

Dr. Levine's office, to my dismay, told me he only saw patients one day a week, and he was booked solid for six months. I made an appointment anyway and told the secretary that if anything opened up (not during rush hour), she should call me. Three weeks later, after someone had canceled, I was sitting in Dr. Levine's office. And I found out why he was so hard to see: He ended up spending almost two hours with me.

Dr. Levine is a researcher as much as a practitioner, and his mission is to find out how tinnitus affects people. He asked me all about my ethnic background (which was almost identical to his, it turned out—we could be cousins), medications I was taking, past injuries and operations, family medical history, the nature of the sound I was hearing and dozens of other questions. I noticed that his office seemed to be rather noisy, and I looked around for the source of the sound: There was an object on the floor, about the size and shape of a small birthday cake, which was emitting a sound like rushing water. It was a sound masker—an acoustic dither generator. He saw my glance and smiled. "I have it, too," he said.

He cataloged some of the many causes of tinnitus. Besides exposure to loud sound, there are ear infections, wax buildup, benign tumors, drugs (a common sedative, alprazolam, can, in different people, be the cause or the cure for the condition), and stress: physical, biochemical, environmental or emotional. He moved my head, arms and hands into various odd positions and asked me whether the sound changed. He was delighted when I reported that sometimes the pitch of the sound changed, and that sometimes

—CONTINUED ON PAGE 211

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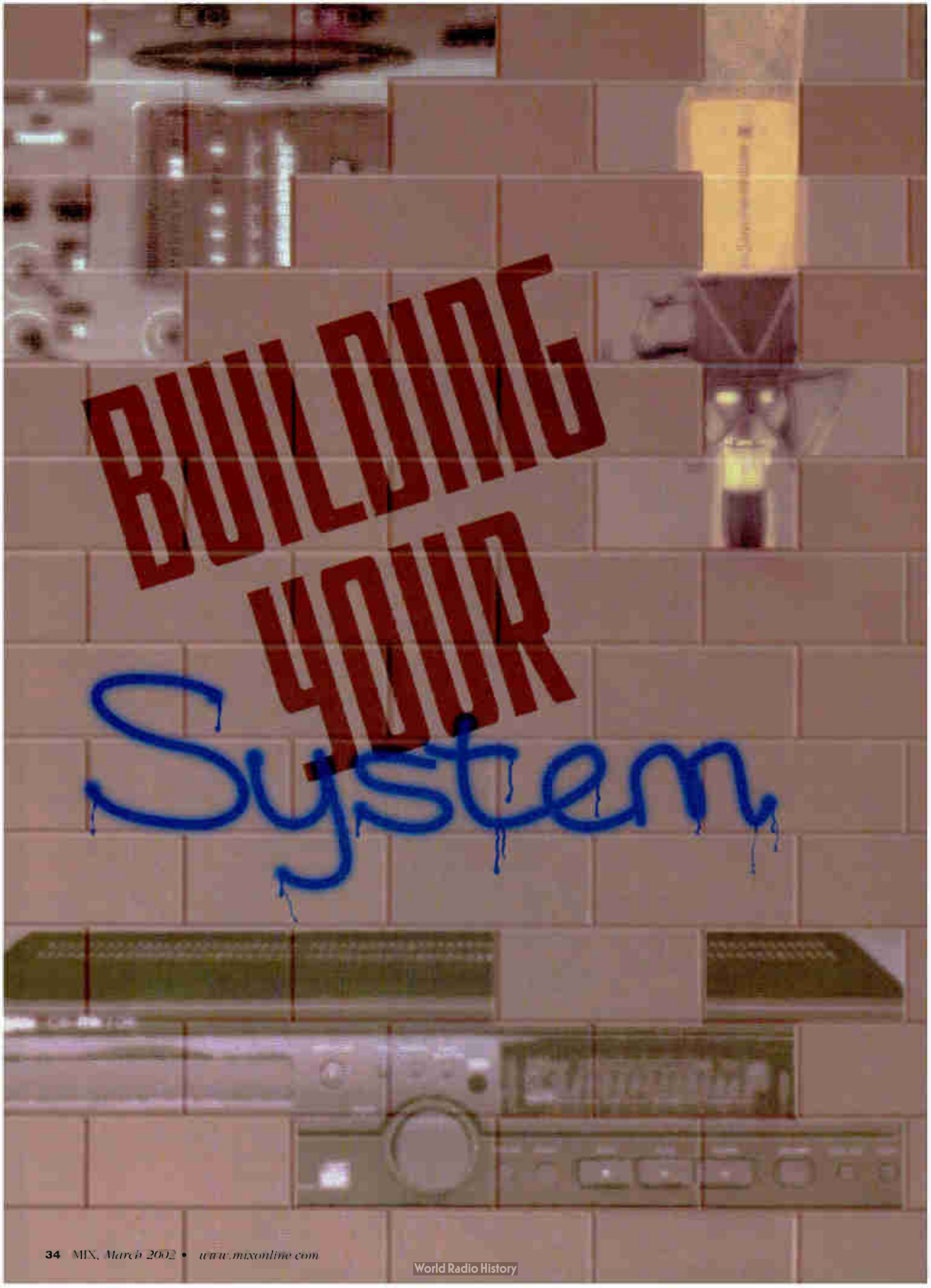

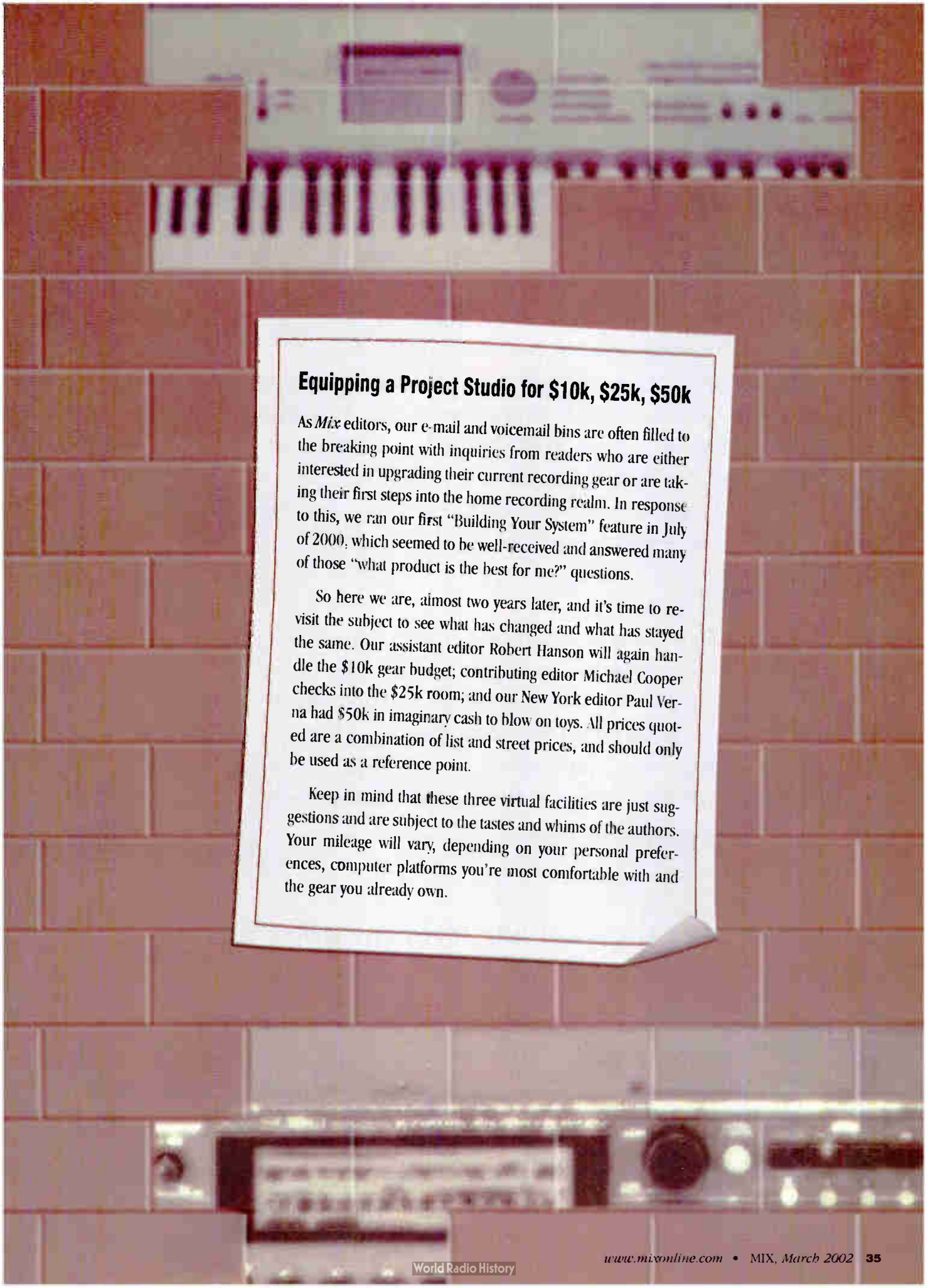

Equipping a Project Studio for $10k, $25k, $50k

As *Mix* editors, our e-mail and voicemail bins are often filled to the breaking point with inquiries from readers who are either interested in upgrading their current recording gear or are taking their first steps into the home recording realm. In response to this, we ran our first "Building Your System" feature in July of 2000, which seemed to be well-received and answered many of those "what product is the best for me?" questions.

So here we are, almost two years later, and it's time to revisit the subject to see what has changed and what has stayed the same. Our assistant editor Robert Hanson will again handle the $10k gear budget; contributing editor Michael Cooper checks into the $25k room; and our New York editor Paul Verna had $50k in imaginary cash to blow on toys. All prices quoted are a combination of list and street prices, and should only be used as a reference point.

Keep in mind that these three virtual facilities are just suggestions and are subject to the tastes and whims of the authors. Your mileage will vary, depending on your personal preferences, computer platforms you're most comfortable with and the gear you already own.

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Walter Afanasieff - Wally World Studios:

"With 20 SCSI drives cluttering up the machine room we knew it was time to consolidate. We looked into the available SANs on the market and heard that SNS had the best. We truly didn't know how good it was going to be until they put it together for us. Now, I can edit a 64 track session in A while setting up a mix in B from that same session on the same drive. I can't imagine ever using SCSI considering the new found stability of our Pro Tools systems."

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"I like to be ready for the next standard. When I upgraded my Mac, I looked into every drive system available. I chose A/V SAN. With this system, I don't worry about DAE errors or drive fragmentation at all and I can access my drives from both of my workstations. I have no doubt that A/V SAN is the new standard for single and multi-user setups.
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THE $10K PROJECT STUDIO

In this day and age, $10,000 is more than enough cash to outfit a fully functional project studio inside of a bedroom or a den, or even in the corner of your living room. Obviously, there's not enough budget for lavish acoustic treatment or that all-important Steinway grand. But there should be adequate money for a robust, computer-based recording rig that could handle anything from basic one-man-band applications to pre-production work and multimedia projects.

THE MAIN RIG

Because we're building this studio from the ground up, the most logical starting point is the main computer, which will handle almost every aspect of the recording process. What I picked was a fully outfitted 733MHz Power Mac G4 with a final price tag of $3,348 (www.apple.com). Now after you pick your jaw up off the ground, here is what that includes: 1.5 GB of RAM, two 60GB Ultra ATA hard drives, a 15-inch Apple Studio Display and a DVD/CD-RW drive/burner. That covers all of my memory needs. It includes two dedicated hard drives (one for the OS and various applications and one for audio files). Furthermore, all of my CD burning and archiving needs are handled well into the foreseeable future. That leaves seven grand for everything from software to mics.

Steinberg Houston Controller

The audio interface is the next link in the chain. My pick is the MOTU 828 ($899). With one simple FireWire connection, I've got eight channels of ADAT I/O, RCA and S/PDIF, eight 24-bit balanced inputs and two mic pre's. The 828 is also ASIO-compliant, and it will work with a dizzying array of audio applications.

There are three real options, as far as native workstations go, that offer professional features and expandability that won't break the bank: Steinberg Cubase, Emagic Logic and MOTU Digital Performer. Here, it all comes down to personal preference; the real differences in the feature sets between these programs are almost nil—it's like splitting hairs: one does this or that different or better than the other and vice versa. So my pick, because it's the one I know the best, is Cubase VST 32 ($799). However, with any of these programs, you've got a winner.

As far as MIDI goes, everyone seems to be building their own purpose-built boxes that promise reliable timing when paired with that company's native DAW. So, to keep it family, I've also picked up Steinberg's Midex8 ($399), an 8x8 MIDI interface. And just to make the circle of emerging trends complete, the Houston VST Studio Controller ($1,599) will round out the set. I'm a sucker for reliability (and motorized faders), and by purchasing all of these products from the same company I know that I'm going to get the most bang for my buck.

As for plug-ins, the Waves Native Gold Bundle ($999) pretty much speaks for itself; you just can't live without items like the C1 compressor and the L1 limiter. Antares Auto-Tune ($299) is another obvious choice. Some other audio/editing software I'd include is Recycle ($199) by Propellerheads and Spark by TC|Works ($399). These two programs are a perfect fit with Cubase: The Recycle REX file format can be directly imported into Cubase, and because of the VST standard, I can swap plug-ins between Cubase and Spark.

As far as synths go, I haven't really found that I need too much beyond Propellerheads' Reason ($399) and the handful of VST synths that come with Cubase. With that, all I need is a simple MIDI keyboard controller, and Roland, Yamaha and Midiman all offer units that fall in the $200 price range. After I plug in one MIDI cable, I'm ready to go. With the amount of RAM and processor speed from the G4, and the expandability of virtual synths, I'll rarely be at a loss for a new bass patch or a snare drum sample.

JBL LSR-25P monitor

LIFE OUTSIDE OF THE COMPUTER

As far as microphones go, you can really get by with very little these days. The Rode NT-1 ($349) is a great-sounding, entry-level condenser that works great on everything from lead vocals to acoustic instruments. Beyond that, a pair of Shure SM57s, which can be found for under $100 each, will provide me with more than enough variety and flexibility when it comes to recording vocals, percussion and miking guitar cabinets.

For monitoring, a pair of JBL LSR-25Ps ($399 each) and a set of Fostex T-40RP headphones ($129) will do the trick nicely. And for those sessions that have more than one set of ears, a Rolls HA43 Headphone Amp ($100) will provide another four headphone outputs.

OVER BUDGET

As I figure it, I'm about $1,000 over. Keep in mind, though, that these are list prices, and all of the items here (excluding the computer) retail for far less than what I've quoted. If I were to purchase these items in the real world, I'd have plenty of money left for cables, stands, a pop screen and other one-off items. So for a modest sum of cash, it's possible to outfit a recording rig that is big on professional features and expandability, yet small enough to fit in a closet when you've got company.

—Robert Hanson

THE $25K PROJECT STUDIO

The specific gear needed to outfit a fully functional recording studio will vary depending on what you're planning to do in the studio. As the owner of a commercial studio, I naturally think in terms of hav-

ing enough mics and I/O to record a band consisting of drums, bass, guitars, a singer and possibly keyboards (or an equivalent number of musicians and instruments).

Let's take a look at what $25,000 can buy to outfit such a studio. I'll be citing approximate street prices in lieu of list prices for each piece of gear I recommend.

AT THE CORE

We'll record to Mark of the Unicorn Digital Performer 3.x (DP3) digital audio sequencing software ($549). Because DP3 currently runs only on a Mac, we'll pick up a dual-processor 800MHz G4 PowerMac ($3,499), which includes a built-in SuperDrive and 80GB Ultra ATA hard drive as standard features. The SuperDrive can write DVD-R, CD-R and CD-RW discs. You can install up to three optional hard drives in the dual-processor G4's internal expansion bays. You'll need a monitor, so let's take home a 17-inch Apple Studio Display, a flat-panel LCD monitor that costs $999.

I prefer tracking and mixing with a digital mixer instead of using a mouse and keyboard. And, because a digital mixer can be used to monitor processed audio *before* sending it to the computer, latency is less than half of what it would be if you were to use an external data-control surface with Digital Performer (monitoring DP3's throughput). Although it's been around for several years, I still think the Yamaha 02RV2 ($5,350 base price) is the best digital mixer in its price class. Compared with less-expensive digital mixers, the 02RV2 offers the most simultaneously available, full-featured I/O and the number of bidirectional digital buses needed to concurrently record and monitor a large band. We'll load up the 02RV2 with three CD8-TDII TDIF cards ($275/each) for 24-bit-capable digital I/O. (Unfortunately, the 02RV2's ADAT Lightpipe cards can only pass 20-bit audio max.)

Together, our 02RV2's three TDIF cards provide 24 channels of bidirectional digital I/O. We'll need an I/O interface for the G4 PowerMac and DP3 to keep all those channels in the digital domain. The MOTU 2408mkII ($869) fits the bill perfectly, as it includes three TDIF connectors on its rear panel and ships with a PCI-324 card for I/O to/from the G4.

We'll also need a way to get MIDI data in and out of the computer. MOTU's MIDI Timepiece AV-USB ($495) does the trick nicely, providing a fully functioning, 8-in/8-out MIDI interface with MIDI patchbay and processing capabilities, including merging and filtering. The unit also provides wordclock out, reads and generates SMPTE in all formats, reads and generates MTC, and provides both USB and legacy serial ports for your Mac.

Using the above setup, DP3 sends MMC transport commands to the MIDI Timepiece AV-USB (MTP AV). In response, the MTP AV sends SMPTE out to the 02R and MTC out to DP3 for automation address lock. The MTP AV also serves as clock master, sending wordclock out to the 02R and 2408mkII (daisy-chained in series) to maintain digital sync.

LET'S HEAR IT

Active monitors have become all the rage, but I'll go against the grain and recommend you pick up a pair of D.A.S. Monitor-8 passive monitors ($750/pair). The Monitor-8s are incredibly revealing reference monitors, offering superb transient response and imaging, ultra-flat frequency response above the mid-bass region and clarity that many monitors only dream of achieving. Add a Tannoy PS-110B Active Sub-Bass subwoofer ($379) to fill in the bottom two octaves, plus a Hafler P3000 Trans•Nova power amp ($550) to power the Monitor-8s, and you'll have a head start on an extremely accurate monitoring system. At some point in the future, you'll want to put some serious acoustic materials in your control room and tracking rooms, but budget constraints mean that'll have to wait for now.

Omnirax's MixStation 02R is built to spec in order to hold the mixer, rack gear and more.

By the way, you won't need a speaker switch box if you route your control room output signals to your Tannoy sub, out the sub's pass-thru jacks and to the Hafler P3000 amp serving your Monitor-8 speakers.

For headphones, I recommend two Audio-Technica ATH-M40fs and two Audio-Technica ATH-D40fs studio headphones ($99 each). The M40s offer a frequency response tailored for singers and guitarists. The D40s (D for "drums") deliver hyped bass and high frequencies that let the drummer and bassist hear themselves better, even while listening to the same cue mix as the rest of the band. Both headphone models offer excellent acoustic isolation and are loud enough to rip your head off, so you won't have to worry about musicians complaining that they can't hear themselves over the live drums. If the band has more than four members and you're running out of headphones, then the bassist and keyboardist can record direct from inside the control room while listening to the Monitor-8s.

Also include a Rane HC6 headphone amp ($399) on your shopping list. It's plenty loud, and it provides 12 headphone outputs; the extra outputs will come in handy when you buy more headphones and record larger bands.

MICS AND STANDS

We'll buy a pair of AKG D-112 mics ($219/each) for kick drum and floor tom, and a pair of Sennheiser MD-421 II ($299) mics for rack toms. A couple of Neumann KM184 condenser mics ($549/each) will sound sweet on drum overheads, not to mention on all of the stringed instruments' overdubs (such as acoustic guitar) you'll record after basics are laid down. Be sure to pick up three Shure SM57 mics ($79/each) to record snare drum, electric guitar cabinet, and either a scratch vocal or a second electric guitar. Finally, an AKG C-414B-TLII large-diaphragm condenser mic ($860) can be used on the hi-hat while tracking basics and on the lead vocal during overdubs. One of the most under-rated and versatile mics on the market, the TLII offers deep bass extension and a highly detailed, open sound that's particularly flattering on vocals, cello, floor tom, hi-hat, and stringed instruments such as acoustic guitar and mandolin.

Be sure to pick up eight AKG mic stands with boom arms ($59/each) and a couple of desktop mic stands ($29 with boom arm) to use with all the mics you bought.

HARDWARE SIGNAL PROCESSORS

For DI duties, pick up a Demeter VTDB-2b Tube Direct ($489). The Tube Direct is one of the best-sounding and most versatile tube DIs on the market.

Also pick up a Lexicon PCM 81 ($2,000) for digital reverb and multi-effects. Pro-quality reverbs are essential for great-sounding mixes, so we won't scrimp here.

MAS PLUG-INS

You'll want to add to the standard plug-ins MOTU ships with Digital Performer. The Waves Native Gold Bundle ($999) provides a host of extremely high-quality plug-ins: L1+ Ultramaximizer (which provides brickwall limiting/maximizing), stand-alone IDR dither (IDR is also available in the L1+), C1 Compressor/Gate, S1 Stereo Imager, Q10 10-Band Para-Graphic EQ, TrueVerb Reverb/Distance Processor, DeEsser, SuperTap 2-Tap Delay, SuperTap 6-Tap Delay, Renaissance Compressor, Renaissance EQ, Renaissance Reverberator, MaxxBass, Ultra-Pitch 6-Voice PitchShifter, MetaFlanger, MondoMod, Doppler, Enigma (modulation, filtering and reverb), C4 Multiband Parametric Processor and PAZ Psychoacoustic Analyzer.

Use your AKG C-414B-TLII for hi-hat or lead vocals.

Another must-have is Antares Auto-Tune MAS ($299), which will transparently process all of your off-key, monophonic vocals and instrumental tracks to perfect concert pitch.

FURNITURE AND CABLES

The Omnirax MixStation 02R ($1,100) provides a built-to-spec mix table for your 02RV2, plus much more. The MixStation 02R comes with flanking sidecars fitted with 19-inch rack rails that accommodate up to 42 one-rackspace pieces of gear, and is finished with shelf tops for placing your Monitor-8s. In the future, when your budget permits, you'll want to get hefty, stand-alone speaker stands for your mains.

Tallying what we've bought so far, we're left with roughly $1,292 for cables. Besides the obvious analog audio I/O cables, don't forget to pick up three Yamaha TDIF-CABLE cables (for bi-directional digital I/O between the MOTU 2408mkII and Yamaha 02RV2), two Apogee WydeEye wordclock cables, two Apogee WydeEye S/PDIF digital audio cables (for digital 2-track mix I/O between the 02RV2 and 2408mkII) and a cable for your SMPTE feed to the 02R. Depending on the length and quality of the cables you buy, your budget might be maxed at this point. But if you still have enough money to pick up a Neutrik NYSSPP 48-way patchbay

($69)—and with some extra line and insert cables for connection to the bay—you'll appreciate having access to your most-often-used analog I/O in one place.

—Michael Cooper

THE $50K PROJECT STUDIO

Half a generation ago, $50,000 could buy an aspiring recording artist a decent analog multitrack, a passable mixing desk, a few pieces of "prosumer" outboard gear, a respectable mastering deck and a handful of pretty good mics. In other words, a nice "demo" studio that could supplement a recording career but not afford the owner the luxury of working predominantly at home.

Today, thanks to advances in digital signal processing and storage, many musicians are able to record and mix their albums in their own studios, without spending a fortune on equipment.

That's not to say that a personal studio does everything that a $2,000-per-day commercial facility does, but the results can be surprisingly comparable given a high level of skill and intelligent purchasing decisions on the home studio owner's part.

For this hypothetical scenario, let's assume a budget of $50,000 and the following criteria: The user is a serious musician/composer/programmer who wants to record, edit and mix master-quality tracks at home in an existing room that lends itself to this task; the studio owner is committed to digital recording but wants to maintain a strong analog presence in the front end of the recording chain to give the music a distinct sonic personality; the user wants to ensure a high degree of compatibility with other musicians, recording artists, engineers, studios, etc; and the studio should accommodate the live recording of small ensembles.

The first major decision to make is choosing a recording/editing/mixing system. Now that nonlinear editing is *de rigueur* in music production, I can't find any rationale for a tape-based studio given the conditions set out above. Accordingly, I would make the case for a digital audio workstation as the facility's centerpiece, supported by a nice complement of analog and digital technology.

Even though several companies offer compelling products, the workstation that remains the industry standard is Pro Tools. For that reason—and because of the system's inherent strengths—I would build this studio around a Pro Tools rig. Specifically, I would jump headfirst on the high-sampling bandwagon and invest in the brand-spanking-new Pro Tools|HD system, introduced in January at the NAMM show. Available in three flavors —conveniently named 1, 2 and 3—Pro Tools|HD sports a new, more powerful set of sound cards than its MIXplus predecessor; a new generation of hardware, including audio, MIDI and synchronization interfaces (and, eventually, remote-controllable preamps); and support for sampling rates up to 192 kHz.

Prior to the introduction of HD, I would have recommended to this hypothetical studio owner the industry-standard Pro Tools Mix3, which listed for $11,995. Coincidentally, the HD 3 system costs the same, and is more than twice the workstation.

For a hardware interface, I would go with the ultra-powerful 192 I/O for $3,995. A 24-bit converter capable of sampling rates up to 192 kHz, it features up to 50 channels of analog and digital I/O in various combinations (including AES, TDIF and ADAT digital formats); up to 16 tracks of simultaneous I/O with Pro Tools software; and older Digidesign audio interfaces compatibility.

Is this overkill for a personal studio on a limited budget? Not when taking

into account the above criteria—the master-quality tracks, the sharing of projects, etc. Previously, 24-bit audio was the domain of the ultra-pro. MDMs just didn't do that. Today, 24-bit is a universally accepted standard for audio production (notwithstanding the CD's fixed wordlength of 16 bits).

Similarly, 96 kHz—and, by extension, 192 kHz—is becoming less of a luxury and more of a necessity among audio recordists across the spectrum. Anyone wishing to keep pace needs to embrace the high-sampling movement, asap.

For a computer, I wouldn't settle for less than Apple's top-of-the-line Dual 800MHz Power Mac G4, which lists for $3,500, and a $1,000 Apple 17-inch Studio Display. That brings us to a subtotal of $20,7490.

Until recently, you would have had to add several thousand dollars' worth of SCSI storage and backup solutions to round out a system of that caliber. However, given that FireWire is well on its way to replacing SCSI as the protocol of choice, I would avoid SCSI altogether and invest in a Glyph Project X 60-gigabyte FireWire drive ($620). For most applications, this is plenty of space, but in case you need to temporarily move files over to another drive, your Mac's built-in 80-gigabyte drive should suffice. (Digidesign does not recommend playing sessions from internal drives in a TDM system, but there's no law against using your Mac for storage.)

Down the road, when you need hundreds of gigabytes of storage for your 192kHz files, someone will make a FireWire drive that's within your budget.

In the meantime, the Mac's built-in CD-R makes a good, industry-accepted backup device for most applications. In cases where the individual sound files are too long for a CD, a high-capacity tape drive, like an AIT or DDS unit, will do the trick. However, for the purposes of this studio, let's make do with the CD-R.

Neumann TLM103 with shock-mount

Although Pro Tools offers MIDI sequencing, if you want to share projects with other musicians, then install Logic Audio Platinum ($800) and Digital Performer ($795) in your studio computer. These programs are extremely powerful, popular and versatile, and they integrate seamlessly with Digidesign hardware. At less than $1,000 each, they're well worth the money.

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Because $50,000 *won't* buy you racks full of Pultecs, Fairchilds, LA-2As and 1176s, the plug-in equivalents will have to do. Without laboring over the specifics, let's say that a plug-in budget of $3,000 is a good start to get such essentials as the Waves Gold Bundle, Auto-Tune, the McDSP suite and the Bomb Factory line of vintage emulators. Many other worthy models—like Amp Farm and the Focusrite line—usually get bundled with the Pro Tools system, depending on what promotion Digidesign is running at the time.

I'm showing a running total of $25,705, which means we're about halfway there! And *please* feel free to check my math. I'm a music guy, not a numbers guy...

For the studio's mixing desk, it's a tough choice between a Pro Tools controller or a digital audio console. Although it would be lovely to have an analog console to add some personality to the studio, a board with the necessary audio quality and versatility is not within the budget.

Prior to the appearance of Pro Tools|HD, I would have argued that any number of 48kHz digital audio consoles would give the user more flexibility than a Pro Tools interface. However, given the dearth of affordable digital boards that sample at 96 kHz or above, I would go with a Digidesign controller, notably the Control|24.

Avalon VT-737 preamp/compressor/equalizer

Not only does this Ethernet-based controller provide 24 faders and virtually complete control of every Pro Tools parameter, it also has 16 Focusrite Platinum preamps, which address most—or possibly all—of this studio's analog front end needs. At $7,995, Control|24 is not pocket change, but it's a really good value considering the quality. We now stand at $33,700.

The preamps in the Control|24 are more than adequate, but for that single-most important channel (the lead vocal? the lead guitar?), I would splurge on an Avalon VT-737, a preamp/compressor/EQ of the highest order. Its $2,295 price tag brings the subtotal to $35,995.

Once upon a time, a studio needed to invest a large chunk of its equipment budget on a mastering deck. After all, what good is a $200,000 console if the final mix gets recorded onto a crappy deck? In these days of mostly digital processing and mixing, the workstation becomes the mastering deck, with CD-R backups of the session and high-resolution sound files constituting the "part" that goes to the mastering house.

K240 STUDIO HEADPHONES

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K141 STUDIO HEADPHONES

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However, I would still recommend a real-time deck for quick-reference mixes. If DAT compatibility is important to you, then any number of pro DAT machines should do it. However, my vote goes to a real-time CD-R machine like the Tascam CDRW-700 ($749). Even if you don't end up mixing to it, the CDRW-700 is a great reference CD player for your studio, especially if it's digitally connected to your workstation.

For those of you keeping score, the subtotal is now $36,744. MIDI-wise, a $50,000 studio should provide all of the necessary solutions for a musician/composer who needs to create and edit MIDI files as well as interface with other MIDI-based musicians and engineers. The best catch-all solutions are the Korg Triton ($3,000 for a 61-note keyboard) and the Roland 5080 ($2,495). Both are extremely musical in their sound palettes and versatile in their programmability and compatibility. Connected to the studio via Digi's new MIDI I/O ($595), the Triton and 5080 would more than suffice as synthesizers, drum machines, samplers and sound modules. Adding the two synths and the MIDI interface to our previous subtotal of $36,744, we now stand at $42,834. A few more shopping days left till downbeat!

That brings us to the more personal aspects of the studio: microphones, monitors, headphones and accessories.

For mics, the choices are virtually infinite and based almost entirely on personal preference. Given the budget, I would shoot for a compromise between quantity, quality and variety—i.e., a nice mix of dynamic mics, tube and transistor condensers, ribbons, large-diaphragm and small-diaphragm models, etc. My choices would be: Neumann TLM103 condenser with shock-mount ($1,215); Rode NT-2 large-diaphragm tube ($649); Shure SM57 and SM58 dynamics ("street" price of roughly $180 for both); AKG D-112 "kick drum" mic ($338); Audio-Technica 4051 small-diaphragm cardioid condenser ($700); and Coles 4038 ribbon ($1,135). The total mic budget: $4,217, for a running total of $47,051.

Monitors, similarly, are a personal choice. As long as they help you make the right mixing decisions, it doesn't matter what speakers you use. With that said, I would recommend an affordable, pleasant-sounding, and widely used model for maximum compatibility; my choice would be the Mackie HR824s, for roughly $1,600 per pair.

Headphones are often an afterthought in recording studios, which is sadly ironic, given that the vast majority of recording is done while listening through headphones. For a personal studio, I would recommend two models that cover the gamut in terms of frequency response and volume: the Sony MDR-7506, which tends to sound bright and loud; and the AKG K-240M, which is mellower and softer. At $176 and $173, respectively, these industry workhorses are affordable and essential. (For the small-ensemble sessions I alluded to, the studio owner may have to implement a bring-your-own-cans policy.) With the Mackie monitors and Sony and AKG headphones factored in, our grand total is an even $49,000, fast approaching $50,000.

Digidesign Pro Tools|HD and Control|24 studio with Mackie HR824 monitors

With the remaining grand, I would invest in some acoustical treatments to tighten up the room's sound, which is bound to need tweaking. Without knowing the room, of course, it's impossible to estimate how much one would have to spend to make it sound acceptable for recording, editing and mixing. However, assuming it's a decent-sounding space with favorable dimensions, the Auralex Roominator Pro Plus, for $999, should be more than enough.

Well, now we're exactly $1 short of the mark. Should we stop here and tape the lucky dollar bill to the studio wall? Naah. Let's go a little further. After all, the figures I quoted were suggested list prices (except for the Shure SM57 and SM58, which were estimated "street" prices). Anyone who has bought anything from a pro audio shop knows that most retail outlets sell well below list. So, if you spec'd this exact studio from a dealer or group of dealers, then you would be likely to come up with a total closer to $40,000 rather than $50,000.

So, now that I gave myself license to stretch the credit card a little thinner, let me suggest the following finishing touches:

Today, no studio is complete without a broadband connection that will allow the home recordist to collaborate with other studio geeks throughout the globe, or send mixes for approval to faraway clients. In most areas, you can get a cable modem or DSL for an installation charge of $100 and a monthly fee of $60. Taken together and projected over the first year, the cost of broadband connectivity is $820. (If the home is already connected, then you can scratch the $820 off your list and substitute a cable router or hub, for anywhere from $50 to $300, depending on your needs.)

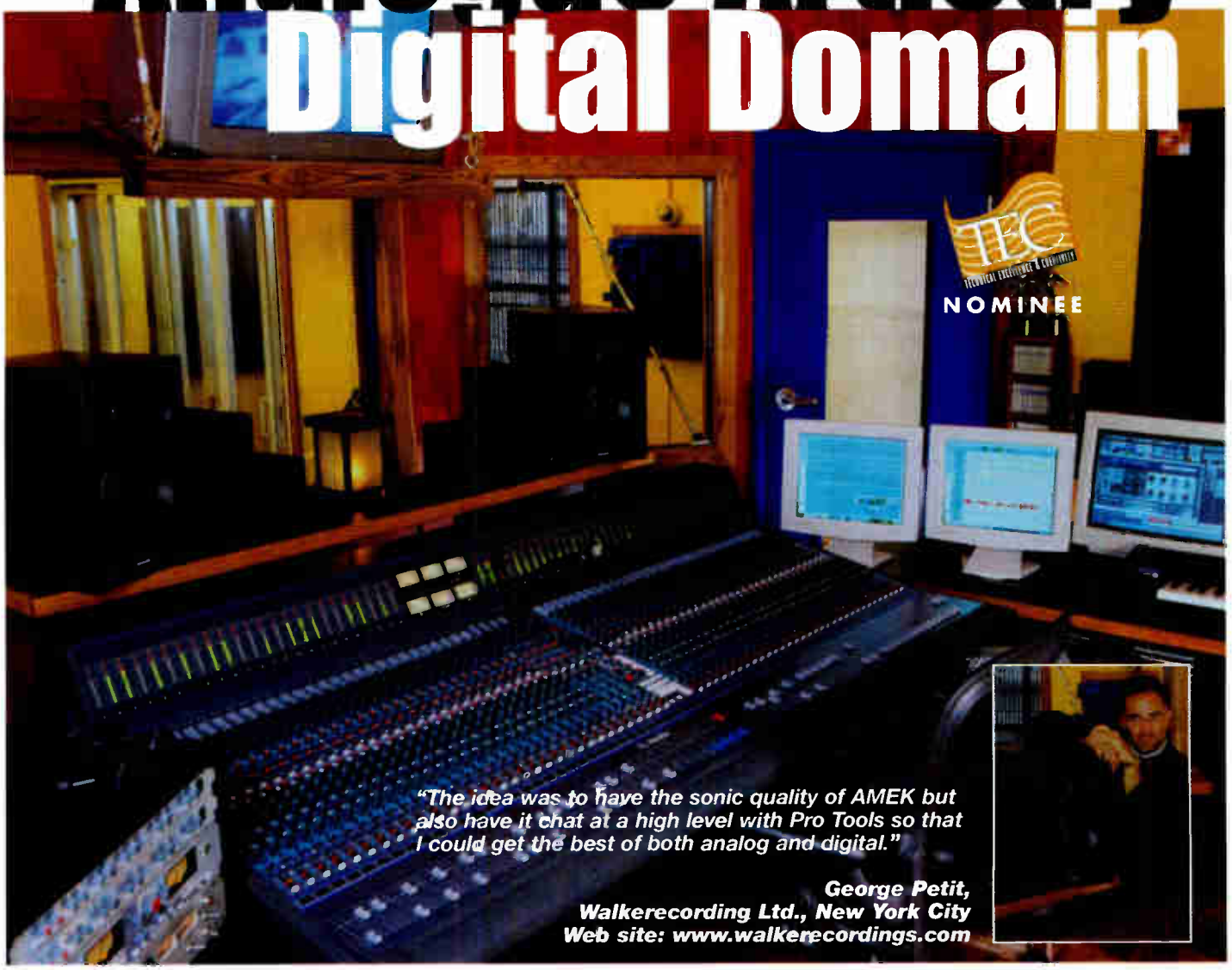
Throw in accessories like four K&M heavy-duty mic boom stands ($320 total), $500 worth of high-quality cabling (because your sound will only be as good as the weakest link in your signal path), a couple of pop filters ($40 total), sand bags for when you use the weighty Coles mic ($40) and a good USB hub ($70), and the grand, grand total is (drum roll, please)...$51,789.

Well, now that you just spent your life savings on a dream home studio, go make some music! It's never too early to start recouping your investment.

Acknowledgment: Al Spinelli, sales manager at New York retail powerhouse B&H Pro Audio, provided invaluable assistance in devising the equipment list for this studio. ■

—Paul Verna

Analogue Artistry
Digital Domain



"The idea was to have the sonic quality of AMEK but also have it chat at a high level with Pro Tools so that I could get the best of both analog and digital."

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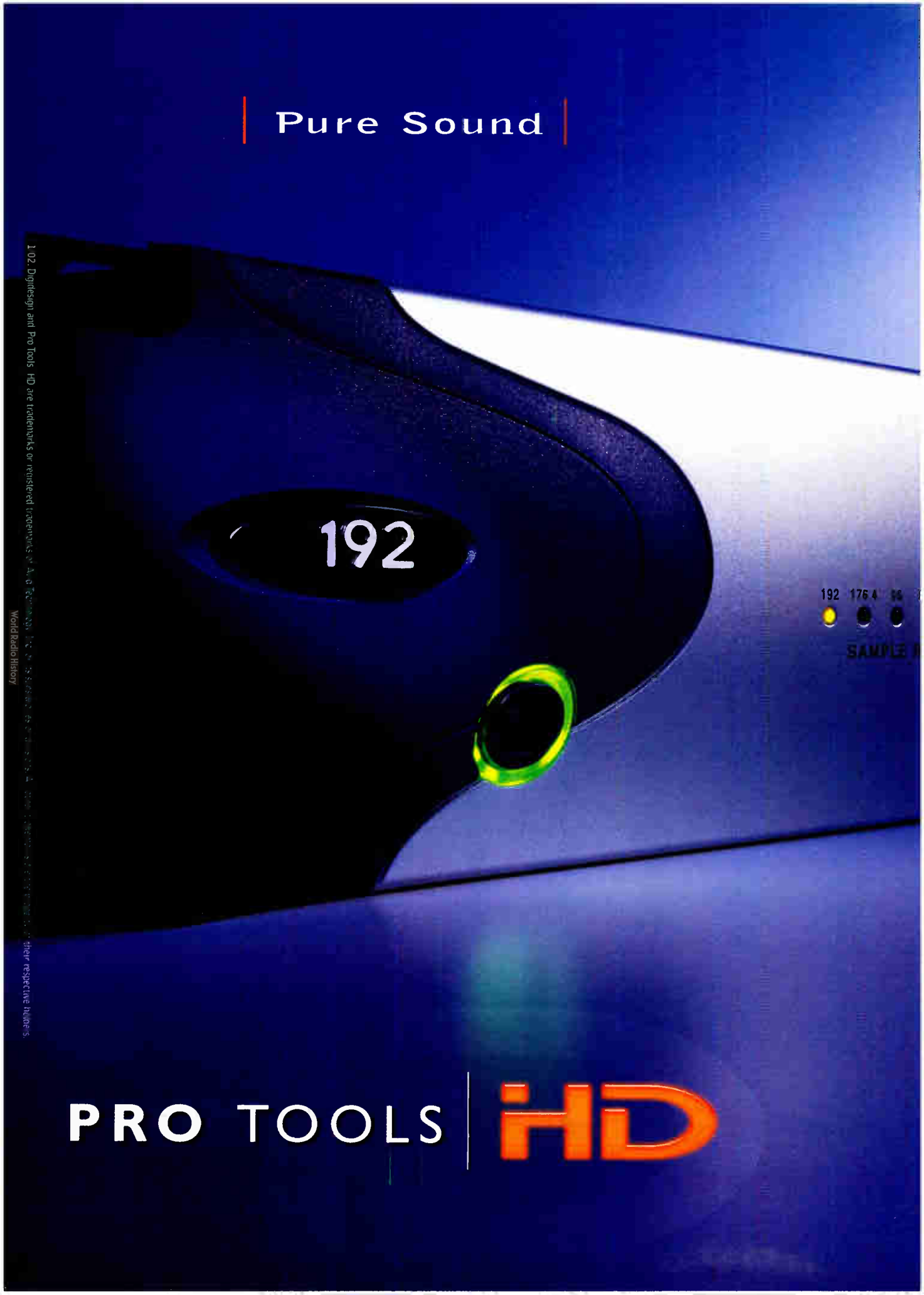
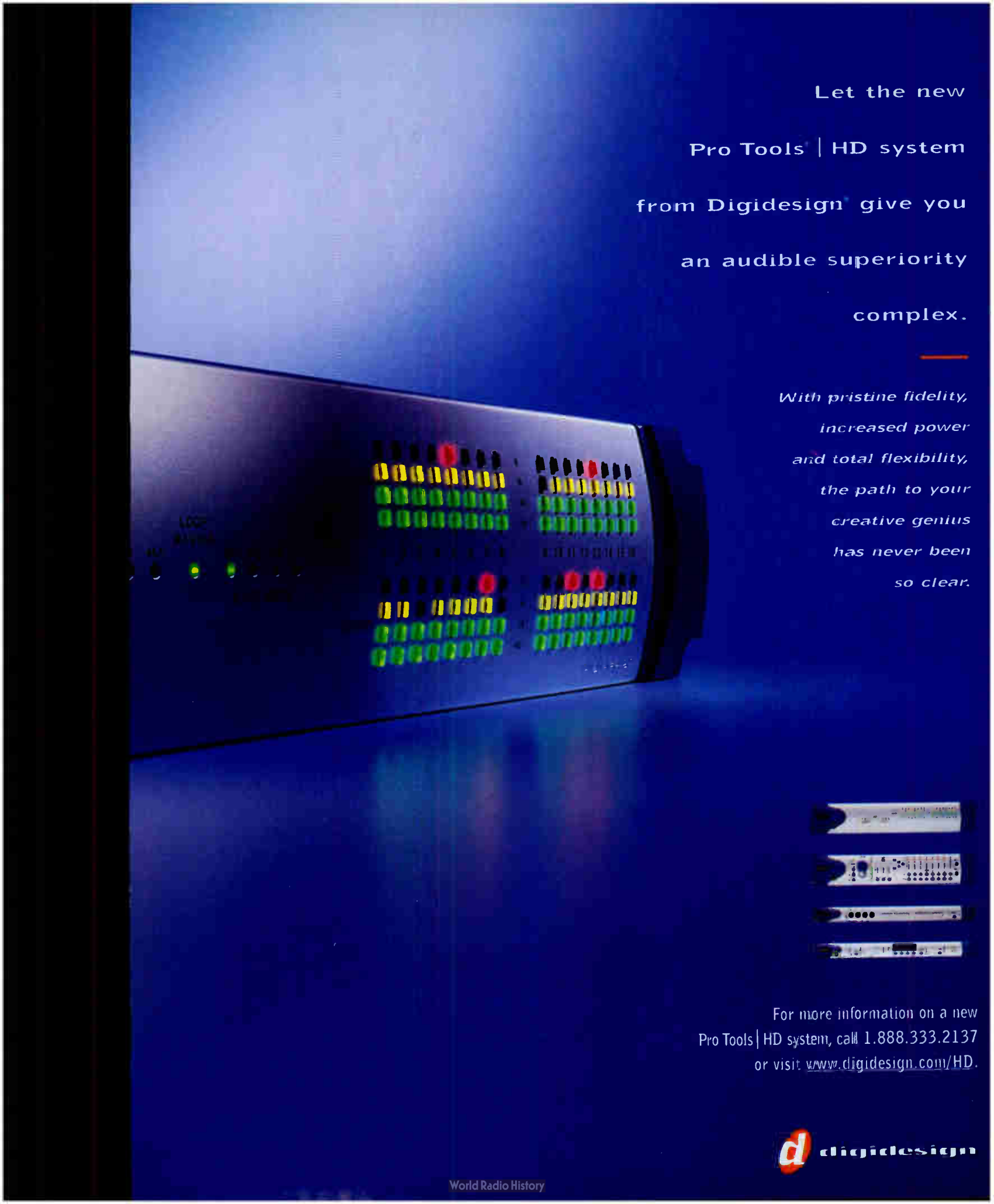
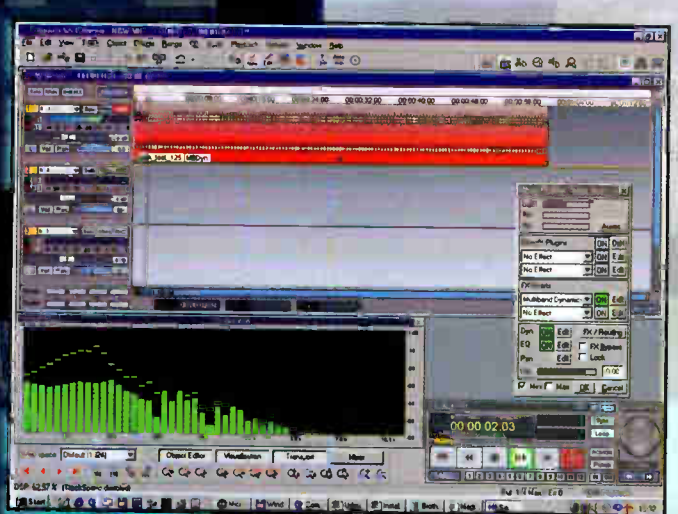




24/96 DAWs

BY RANDY ALBERTS

Akai DPS24



SEK'D Sequoia 6.0

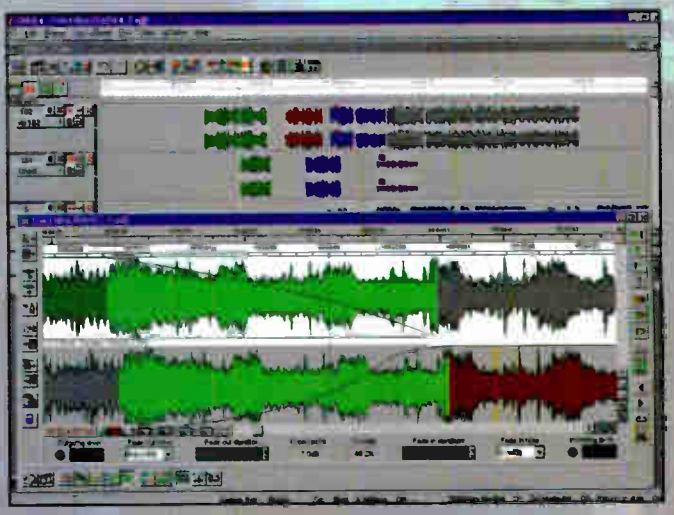
Once upon a time, grunge was cool, the Berlin Wall came down, and 20-bit/48kHz recording was considered over the top. It wasn't long ago that 24-bit/96kHz DAWs were only found in the upper crust of audio facilities, yet 96kHz sampling rates are showing up on more spec lists ever since. Even 192kHz-capable systems are growing in numbers today. Considering that sampling rates ending in *megahertz* may not be too far away, 96kHz voice-mail attachments may be the norm in e-mails by 2005.

In *Mix*'s annual report on the diverse market of studio DAWs, we'll examine recent developments in 24/96 (and beyond) models, whether they're in the form of software/hardware "just add computer" packages, one-piece stand-alone *wunderstudios*, or total turnkey solutions focusing on production systems. DAWs for audio mastering, archiving and restoration are not included.

These days, OS revision and software version numbers like 4.0, 6.0, 9.0 suggest that digital audio has come a long way—or at least gets ever closer to the Holy Grail of "getting it right." This article focuses on completely new DAW systems and updates to software and hardware platforms that have been introduced over the past year, so we did not include existing high-resolution systems—such as iZ RADAR24, DAR Storm and the Euphonix R-1—that did not have major upgrades this year.

Merging Technologies' Pyramix Virtual Studio 4.1

Tascam SX-1



SADiE 4.2 Disk Editor

Fairlight DREAM Station

AKAI

Released last year and now shipping is the new DPS24 ($5,499, with 60GB hard disk and CD-RW drive), a 24-bit/96kHz "digital personal studio" from Akai that offers 56-bit, 4-bus multi-effects processing, a 44-channel digital mixer, optional internal CD-RW drive, and 20 tracks of simultaneous, uncompressed digital recording. Each channel features level, pan, dedicated dynamics processing, 3-band EQ (hi/low shelving and sweepable mids with variable Q), 100mm moving faders and full dynamic automation. Other goodies include phase-coherent time stretching, BPM matching, Normalize and Reverse functions, and an array of inputs and outputs, including 28 analog inputs and a number of I/O options.

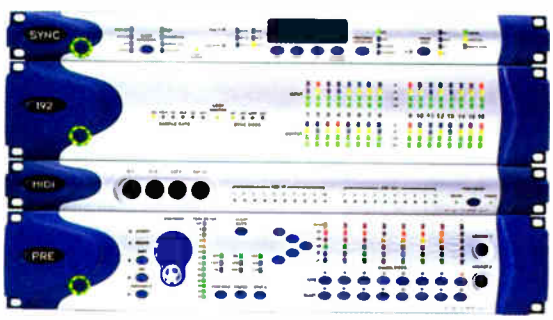
Akai has also released Version 2.0 and 3.0 software updates for its popular 24-bit/96kHz digital personal studio, the DPS16 ($2,795). Version 2.0 adds a 4-band stereo multiband compressor, Disk-at-Once CD burning mode and a new Normalize processor. An improved Edit mode allows the user to load and save .WAV files from external SCSI hard disks. Individual tracks can be saved as a mono .WAV file, or pairs of tracks can be selected and saved as stereo .WAV files as well. Two user-programmable scales have been added to the existing 13 preset scales in the unit's onboard, real-time vocal pitch corrector, and a new smoothing parameter allows for natural vibrato to be retained when correcting voice tracks. A handy new MIDI note-triggering feature allows the DPS16 to track MIDI data from external MIDI keyboards and adjusts pitch in real time. Version 3.0 software, among other improvements, gives DPS16 users the ability to perform sample rate conversion and dithering when reducing 24-bit/96kHz recordings to 16-bit/44.1kHz files for audio CD production.

The New Production Standard?

24/96 DAWs

DIGIDESIGN

Digidesign's Pro Tools|HD, the company's next generation of DAW hardware for the Pro Tools platform, is here. Three Pro Tools|HD (High-Definition) systems, each centered around the new HD Core card, offer increased sample rates (up to 192 kHz), higher track counts and I/O capacities, beefed-up DSP power and expanded routing capabilities in a slew of new hardware devices. Pro Tools|HD 1 ($7,995) has one HD Core card with support for up to 32 channels of audio I/O and 96 simultaneous audio tracks with one or more of the new HD interfaces. Pro Tools|HD 2 ($9,995) has an HD Core card and an additional new HD Process card (also sold separately at $3,995/each) to more than double the mixing and processing power of the HD 1 system (up to 64 channels of I/O and 128 simultaneous tracks). The flagship Pro Tools|HD 3 system ($11,995) sports one HD Core card and two more HD Process cards for up to 96 channels of I/O and 128 simultaneous tracks. Each system comes with a free plug-ins promo HD pack and support for all older Pro Tools sessions (full session support for Pro Tools 5.1 and higher projects).



Digidesign Pro Tools|HD

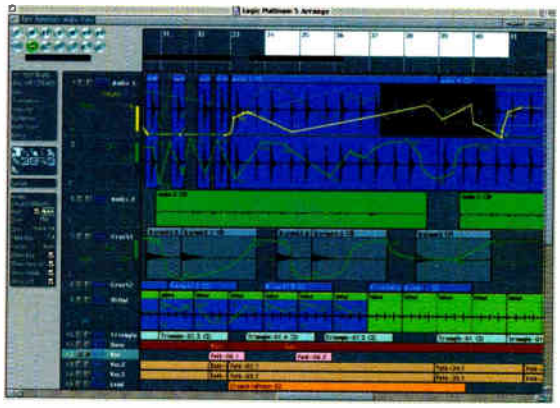
The new Digidesign hardware lineup also includes the 192 I/O ($3,995), 96 I/O ($1,995), SYNC I/O ($2,095), PRE ($2,495), MIDI I/O ($595) and lots of optional equipment. The 192 I/O features a 24-bit/192kHz sampling rate, up to 50 analog and digital ins and outs, and support for up to 16 simultaneous channels of high-definition I/O with Pro Tools software. The 96 I/O offers 8 channels of up to 96kHz in/out performance, and a Legacy peripheral port on both of the new I/O boxes allows connection of existing 888|24, 888|20, 1622 or 24-bit/48kHz ADAT Bridge I/O devices. SYNC I/O provides near-sample-accurate lock to time-code or bi-phase signals and up to 192kHz wordclock I/O compatibility. PRE is a high-performance, remote-controllable, 8-channel analog mic preamp with support for XLR mic, DI and ¼-inch line-level inputs, and full remote control via Pro Tools. (Control|24 and Pro Control remote support is planned.) MIDI I/O is a USB-powered interface with 10 in/out ports, up to 160-channel MIDI operation and support of Pro Tools|HD's future MIDI Time-Stamping feature.

Digidesign has also been busy updating the Pro Tools software platform. Among other changes, Versions 5.1, 5.2 and the new Pro Tools 5.3 (required for Pro Tools|HD systems) provide a wide range of surround, edit, navigation, MIDI sequencing and session interchange capabilities. Integrated surround mixing, panning and processing features include support for standard multichannel formats such as LCR, Quad, LCRS, 5.1, 6.1 and 7.1. Surround pan controls are now integrated into the main Pro Tools interface, with each track supporting independent panning on its outputs and sends. New mixer architecture allows multiple destinations for each channel output or send, enabling simultaneous mixing to multiple formats. Also, a new I/O Setup window enables users to define custom I/O routings. Multiple levels of undo and the ability to automatically save sessions at chosen intervals are new, and Pro Tools now supports RTAS plug-ins on TDM systems, as well.

Introduced with Version 5.2 (Pro Tools|HD users will have to wait until V. 5.3.2 emerges in Q2 2002) are the RocketNetwork-powered, online DigiStudio and DigiProNet collaboration environments, and Beat Detective, which can perform multitrack rhythm analysis and edit-smoothing functions while it intelligently corrects timing in performances with strong transient points, such as drums, percussion, bass and guitar.

EMAGIC

Scheduled to ship in January 2002, Emagic Logic Platinum 5.0 ($949) is the latest version of the Logic Audio platform, and now features a slew of totally redesigned automation system features, more than 50 onboard plug-ins and new scrubbing functionality. High-end dithering and high-quality audio file support for all Logic Series platforms are included, as are some major Score editor enhancements, new file-format support, and integration of the much-anticipated Logic Control and Logic Control XT. Multiple undo/redo is also due shortly after NAMM, and support for individual output of audio instruments is also planned.


Emagic Logic Platinum 5.0

Emagic's new Logic Control ($1,299) is a hardware controller for Logic Platinum 5 software. A virtually limitless number of Logic Control and Logic Control XT 8-channel expander units ($1,029/each) can link via MIDI, and user-definable button and fader assignments are expected soon. High-quality, 10-bit, 100mm motorized faders from Penny & Giles are included on the Logic Control, and surround mixing parameters such as angle, diversity, LFE and Surround mode are also controllable.

FAIRLIGHT

Fairlight's new DREAM (Digital Recording, Editing And Mixing) family of digital audio workstations includes the DREAM Station, a completely scaleable turnkey solution featuring the company's Quad Digital Channel (QDC) technology. (See the December 2001 "Technology Spotlight" in *Mix* for more information.) Priced at $37,650 for a 24-track/12-bus system with 16 analog outs, eight analog inputs and eight digital I/Os, the DREAM Station incorporates all the functionality of Fairlight's 48-track DREAM Satellite system integrated into a full spec, fully automated, 56x16 digital mixing system. Every channel on this good-looking DAW is equipped with six bands of EQ and a 2-stage dynamics section, and each bus is equipped with its own bus dynamics and 4-band EQ section. All processing is achieved through 40-bit floating-point DSPs. DREAM Station's channel dynamics include full sidechain fa-

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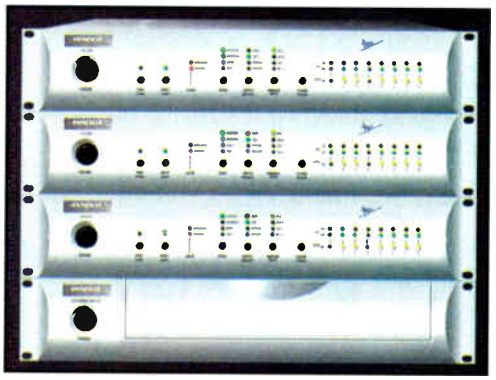
24/96 DAWs

cilities and Fairlight's DynLink function, which allows any signal or group of signals to derive their control signal from any other individual signal path or group of signal paths.

In order to make third-party software available to its FAME2 and Prodigy2 users, Fairlight has developed the System Services Module (SSM). One of the first SSM applications is the Fairlight Plug-Ins Manager, a hardware and software suite that allows users to run both proprietary Fairlight and commercially available VST plug-ins without interfering with the operational reliability or speed of the Fairlight core operating software. VST plug-ins can now be automated and driven either from the manufacturer's GUI or from the faders, knobs and switches on the two DAWs' respective console control surfaces.

cessing, playback, storage and synchronization chores. Soundscape 32 offers 32 tracks of 24-bit recording at sampling rates up to 96 kHz, customized real-time digital mixing, a comprehensive automation package, support for third-party plug-ins and EDL compatibility with a variety of video editors. The unit's back panel offers multiple I/Os, including three TDIF in/out, 2-in/4-out AES/EBU, two 24-bit/96kHz mic inputs and four 24/96 balanced line-level



Mackie Soundscape 32

MACKIE DESIGNS

Mackie was a veritable business hub in the DAW world the past year. As an OEM, the company builds the new Logic Control and Logic Control XT software control surfaces for Emagic, and, thanks to a strategic partnership with Universal Audio, the U.A.'s UAD-1 Powered Plug-Ins DAW turbo-charger is now being marketed and distributed as a Mackie package. In addition, TC Electronic, Antares and Drawmer are all porting some of their respective processors as plug-ins to Mackie's D8B digital console. Perhaps most noteworthy, Mackie has acquired Sydec (makers of Soundscape R.Ed software and Mixtreme cards, among other products) and has launched the new Mackie Broadcast Professional family of DAW software and hardware.

The Mackie Broadcast Professional family of products will feel familiar to Soundscape Legacy users, though it may look a little different. The Soundscape R.Ed software and SSHDR-1 hardware have been totally redesigned in the form of the new I/O 896 8-Channel Audio Interface and Soundscape 32 Embedded Hard Disk Recorder.

Soundscape 32 is a new direct-to-disk embedded record engine with a separate dedicated microprocessor board. All programs are stored in ROM, which effectively removes the PC from the data stream and relieves it from all audio processing, playback, storage and synchronization chores. Soundscape 32 offers 32 tracks of 24-bit recording at sampling rates up to 96 kHz, customized real-time digital mixing, a comprehensive automation package, support for third-party plug-ins and EDL compatibility with a variety of video editors. The unit's back panel offers multiple I/Os, including three TDIF in/out, 2-in/4-out AES/EBU, two 24-bit/96kHz mic inputs and four 24/96 balanced line-level outputs. Additional interfaces include 9-pin remote device control, MIDI I/O and Ethernet support for network access through TCP/IP.

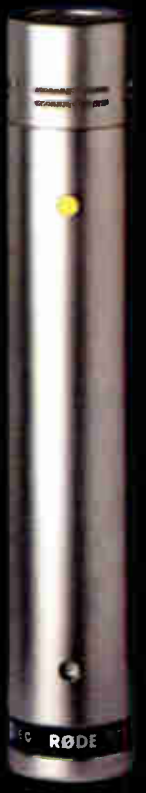
The I/O 896, co-developed with Apogee, brings all of the previous Soundscape audio I/O interfaces' features into one do-it-all box featuring eight channels of AES/EBU, analog, ADAT optical, multichannel MADI I/O, and the ability to add multiple I/O 896s to any Soundscape 32 studio.

MARK OF THE UNICORN

MOTU's 896 ($1,295) is a new 96kHz FireWire audio interface for Mac and Windows systems. Providing eight built-in mic preamps and eight 24-bit analog, eight ADAT optical digital and AES/EBU digital I/O channels, the 896 can be stacked for up to 72 total channels of I/O. The 2U front panel provides three banks of 10-segment level meters, eight trim knobs for the analog inputs, and eight toggle switches that select independent 48-volt phantom power for each analog input. No-latency live monitoring is possible with front panel volume control over moni-

MOTU 896

Spot the difference?



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tored input signals, and up to four 896s can be daisy-chained for 72 channels of analog and digital inputs and outputs. Connecting to any 1394 FireWire-compliant PC or Mac, the 896 does not require PCI or PCMCIA cards and is bundled with AudioDesk workstation software.

MOTU Digital Performer 3.1, released at AES New York in November, is the first major update since Version 3.0 and represented a major GUI upgrade to this popular software platform, winning an unprecedented third straight Editor's Choice Award from *Electronic Musician*. Unlimited multiple undo, branching undo histories and MOTU's new Timeline Undo have been integrated, the latter allowing users to view an Adobe Photoshop-like, time-based linear representation of a session and revisit a desired state with a single click. Building on 3.0's extensive surround production features, MOTU has implemented surround support in 3.1's new built-in Waveform Editor, a feature that lets users perform destructive waveform-editing tasks on surround audio files. Loop-based production enhancements have been added, such as the ability to audition and import REX 2.0 files generated by Propellerheads' Recycle 2.0 loop-editing software, and, like users of Sonic Foundry Acid, Digital Performer users can now drag-and-drop audio loops that will auto-conform to a song's tempo.

MERGING TECHNOLOGIES

Debuting at Winter NAMM 2002, Merging Technologies' Pyramix Virtual Studio 4.1 ($3,000 and up, depending on hardware configuration) runs on a variety of the company's 96kHz I/O sound cards. Up to eight Mykerinos DSP audio cards can now be configured in a single session, and an increased range of I/O daughter cards now include 16-channel ADAT, 24-channel AES/EBU, 24-channel TDIF, 12-channel SDIF, and 56- and 64-channel MADI options. Support for 192kHz sampling rate is big news, but perhaps even bigger is the fact that Virtual Studio now provides a multitrack DSD/SACD record, edit and mastering solution. (WaveFrame's FrameWorks/DX with Merging hardware is the only manufacturer to date that is able to claim the same.) Support for Radikal Technology's SAC-2K controller has been added, as well as support for OMF composition import and direct playback of Akai DD/DR Series disks.

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MACKIE.

24/96 DAWs

ROLAND

Reviewed in last month's *Mix*, Roland's $4,495 VS-2480 Integrated Audio Production Workstation is exactly that—a "studio-in-a-box." Features include 24-track 24/96 recorder/editor, 24-channel mixer with stereo and 5.1 mix capability, moving faders and recall of all console functions, onboard DSP, 16-button phrase sampler, CD burner, and mastering operations, with SMPTE and MIDI integration

Roland VS-2480, with mouse

features. The VS-2480 has stereo S/PDIF (coaxial and optical) I/Os, along with Roland's proprietary R-BUS interfacing for up to 16 simultaneous digital inputs, in addition to the 2480's 16 analog inputs. Options include a 24-channel meter bridge and a variety of external interfaces—ADAT, TDIF, AES/EBU, S/PDIF, and 8-channel ADCs with mic preamps and phantom power, and analog output DACs. Just announced for the VS-2480 is Version 2.0 software, which supports full operation of the system via a mouse and external VGA screen (including waveform displays) and more.

SADIE

Free to registered users, SADiE's 4.2 Disk Editor Software update for the 24•96, ARTEMiS and RADiA systems happens to coincide with this British company's 10-year anniversary. This Windows 2000 Pro- and NT4-compatible 32-bit application offers several display improvements, including individual vertical zoom settings for EDL streams and enhanced waveform viewing for greater precision while editing. The completely reworked Trim Editor interface sports greater functionality, a new Fade Linking feature allows users to further combine and edit fades, and a variety of new preset fade shapes are provided. A stationary timeline in the EDL eases onscreen monitoring of playback, and users with a scrolling mouse wheel can now scroll the playlist virtually. The ability to enable reverse faders in a group, a popular request from SADiE users, lowers selected faders while bringing another up.

SEK'D

The new PRODIF 88 ($799) from SEK'D America is a 24-bit/96kHz, Windows-based, short PCI audio card, one of several that SEK'D offers with its Seqouia 6.0 DAW software. Four balanced stereo AES/EBU digital inputs, four balanced stereo AES/EBU digital outputs, and word-clock input and output are available via a multipin breakout connector bundle. Two balanced ¼-inch analog outputs come right off the PRODIF 88's backplate. Up to eight channels of simultaneous digital record and playback are possible, and up to four PRODIF 88s can be stacked for 32-channel operation.

SEK'D's Sequoia 6.0 ($2,999) has truly matured over the years into an impressive platform. Software updates 6.01 through Version 6/beta 6 have netted many enhancements. Punch-in recording is now possible with external sync, the improved Spektroscope display is more accurate, and extended MMC support now displays the current machine position directly in Sequoia's timebar. Objects can also now be edited and played back during recording, individual tracks can be recorded directly to a number of file formats, and a number of new mastering effects, advanced dynamics effects and 4-band EQ (with high- and lowpass) have been added. WDM-compatible 24- and 32-bit support has been added, as has incremental undo of DirectX plug-in settings and the ability to drag-and-drop EDL files from the command line. Also, AIFF.-reading routines can now accept some non-standard files from other DAWs, such as SADiE systems and others.

STEINBERG

Steinberg Media Technologies is following up its Winter NAMM 2001 release of the

Steinberg 8 I/O 96k

Nuendo 8 I/O 96 (price TBA) with a new set of I/O solutions called the Nuendo Audiolink 96 I/O System. Designed for ASIO-compatible production DAWs and based on Hammerfall hardware technology, the Audiolink 96 system incorporates many features found in the Nuendo 8 I/O 96k and Nuendo PCI 96/52 devices. Mac, PC and even Notebook users can achieve 24-bit/96kHz audio performance with claimed latencies as low as 1 millisecond. S/PDIF and ADAT optical and MIDI I/O are included, as are an integrated mixer for ASIO 2.0 direct monitoring and the company's DIGICheck pro level metering with broadcast-quality peak/RMS values.

The Nuendo Audiolink 96 System consists either of an Audiolink 96 PCI card ($300) or an Audiolink 96 Mobile PCMCIA-type II card ($350) and a choice of I/O solutions. The Audiolink 96 Digiset ($650) offers three ADAT optical, ADAT-Sync In, S/PDIF and wordclock I/Os. The Audiolink 96 Multiset ($850) multichannel I/O provides eight 24-bit/96kHz analog inputs

CONTACTS

Manufacturer	Website	Phone
Akai Digital	www.akaipro.com	817/831-9203
Digidesign	www.digidesign.com	650/731-6300
Emagic	www.emagic.de	530/477-1051
Fairlight	www.fairlightesp.com	323/465-0070
Mackie Designs	www.mackie.com	425/487-4333
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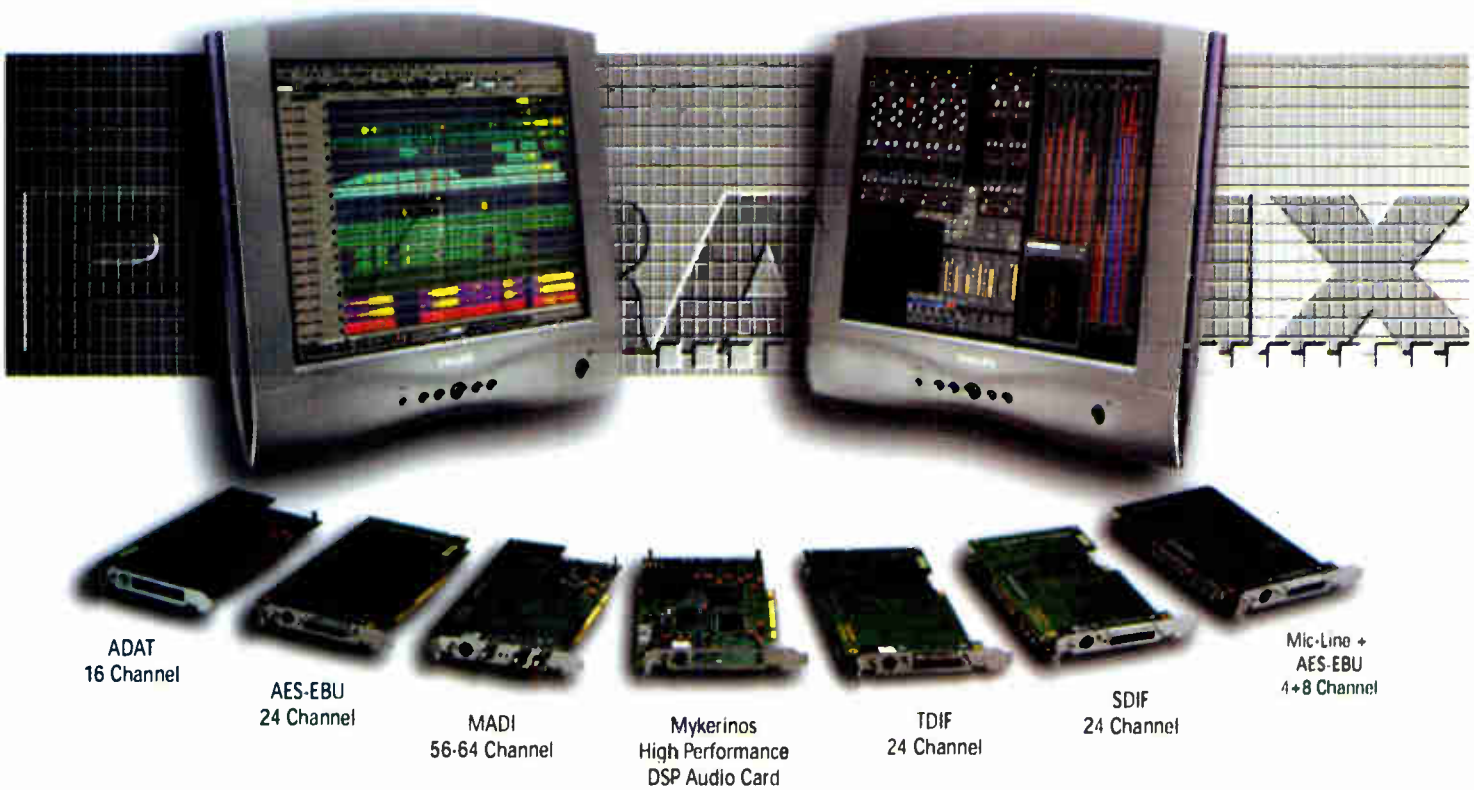

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24/96 DAWs

and outputs. Also new from Steinberg this year is Houston ($1,499), a MIDI/USB control surface that handles most every parameter in the VST and Nuendo audio engines and every VST Instrument. Houston features nine touch-sensitive motorized faders, eight rotary encoders with LED position indicators, full transport controls, a jog/scrub wheel, numeric keypad and a large LCD.

Steinberg's Cubase 5.1 for Mac and Windows, compatible with the company's Nuendo line of I/O options, has received a lion's share of new VST Instruments, virtual effect processors, and optimized program code for AMD Athlon, Pentium III and Pentium IV chips (Windows), and Altivec enhancement for Apple Macintosh G3 and G4 computers. The new JX16 (16-voice, dual-oscillator synthesizer), LM-7 (24-bit drum machine with new compressor, 909 and percussion sound sets) and CS-40 6-voice soft synth have been added to an already long list of VST Instruments, and new bit-depth reducing, valve simulating, comb filtering, MIDI gating and seven other new VST Effects processors have been added, as well. Cubase VST/32 ($799.99), the company's flagship VST platform, now provides ReWire 2 support for Windows users, and the new LTB (Linear Time Base) MIDI Time-Stamping technique, which bypasses the host computer OS for ultra high-speed MIDI timing, has been added to the Mac version.

TASCAM

Tascam's SX-1 Integrated Audio Production Station ($8,999 with 40GB IDE internal drive) is expected to reach selected dealers in Q1 2002. The SX-1 is a 16-track disk recorder/editor that combines up to 24-bit/96kHz sampling with surround 5.1 mixing, 128 tracks of MIDI sequencing, third-party plug-in effects, a built-in CD-RW drive, enhanced mastering capabilities and more. Tascam's DM-24 digital console can operate like a sidecar when connected via the SX-1's cascade port to augment I/O channels, and track count can be increased with an MX-2424 chasing—or being chased by—the SX-1. The lengthy spec list also offers special SX-1 versions of TC Works reverb, Antares mic- and speaker-modeling plug-ins and others, SDII, BWF, .AIFF and .WAV file compatibility, full-feature automation, and a 6-track surround stem recorder that operates side-by-side with the SX-1's main hard disk recorder.

WAVEFRAME

WaveFrame's new WaveFrame/7 ($7,995/core; $11,495/rackmount turnkey), released last year and now shipping, offers 24-bit/96kHz audio, 5.1 surround mixing, synchronized integrated digital video playback, up to 32 channels of I/O, and a variety of digital audio interfaces supporting AES/EBU, MADI, ADAT and TDIF I/O. Sound Selector and Volume Manager are two new media-management tools added since this Windows 2000-based DAW was introduced. A wide range of disk file formats and audio file support is offered. Broadcast Wave Files (BWF) are natively recorded and played to standard FAT-32-formatted drives, and the system can also import SD II files recorded on Mac HFS volumes. EDL compatibility has been addressed with options for import and export of Avid OMF, OpenTL (Tascam MX-2424) and previous WaveFrame 6.x projects, and the aforementioned AES31 standard is now fully supported.

WaveFrame/FrameWorks Version 4.0

WaveFrame's new Version 4.0 of FrameWorks/DX DAW ($5,495/core; $8,295/turnkey) has added music production-oriented support, like snap-to-grid and bars and beats, and a host of new plug-ins. But the biggest FrameWorks news is eight channels of multichannel SACD environment. ■

Randy Alberts (www.opendooredit.com) is a California-based audio and music journalist and a frequent Mix *contributor. His first book,* TASCAM: 25 Years of Recording Evolution, *is being published by Hal Leonard Publishing.*

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THE OPEN DSP PLATFORM FOR MAC AND PC

TC • POWERCORE

MIX – PROCESS – MASTER – PLAY

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TC POWERCORE & 18 Hi-End DSP Tools

ONLY $1.299 US**

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TC POWERCORE integrates seamlessly with your existing VST or MAS compatible recording environment such as Digital Performer, Logic, Nuendo or Cubase. Of course you can use your regular native Plug-ins alongside **TC POWERCORE** Plug-Ins without any limitations!

And thanks to the open 3rd Party Program there will always be new and exciting Tools available to expand the scope of **TC POWERCORE**!

The following Plug-Ins are included right out of the box:

TC MEGAREVERB – Reverbs from TC Electronic's M5000 Reverb Processor.

TC CHORUS/DELAY – advanced modulation FX of the TC1210 Spatial Expander.

TC EQ^{SAT} – The EQ module of the renowned Finalizer™.

TC POWERCORE CL

TC VINTAGE CL – Run up to six of these versatile Compressor/Limiter Plug-Ins on only one of the four available DSPs! And the vintage compression model brings back the sound of analog hi-end compressors.

TC VOICE STRIP

TC VOICESTRIP – A complete channel strip specialized for pristine voice sound processing: tube compressor model, deesser, gate, LoCut EQ, Voice EQ and SoftSat for warm and crisp sounding results!

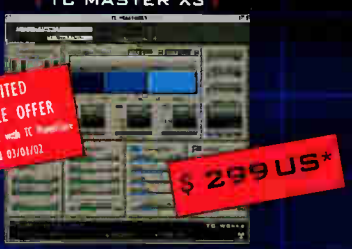
TC POWERCORE 01

TC POWERCORE 01 – This synth Plug-In launches TC PowerCore as platform for virtual instruments! The 01 is modelled after one of the most popular mono-synthesizers and is available in grey, red and blue.

OPTIONS (AVAILABLE FROM DECEMBER 2001)

All options available for Mac and PC. SONY, Waldorf, Antares, TC Helicon and other renowned manufacturers are also in the process of creating products for this platform.

TC MASTER X3



TC MASTER X3 – The virtual version of the world-class Finalizer™ studio mastering processor for knock-out punch. MasterX3 includes a Multiband-Expander, -Compressor, -Limiter and uncorrelated Dithering. In short: all you need to master your mix!

TC MASTER X5

TC MASTER X5 – MasterX5 goes beyond MasterX3 with 5 bands, more dithering options, more processing curves and 48Bit double precision processing. The ultimate Mastering Processor!

D-CODER

WALDORF D-CODER – The first 3rd party Plug-In to become available on the platform is an integrated Vocoder and Synthesizer by German synth-legend WALDORF. The number of vocoder bands is adjustable beyond the usual 25 – and the included polyphonic synthesizer provides an integrated sound-source. Can be played like any other VST-instrument!

* Manufacturer's suggested retail price. MasterX3 available separately from 03/2002.
** The included Plug-Ins are highly integrated and include 2-6 tools each!

Version 1.5 available from December 2001.

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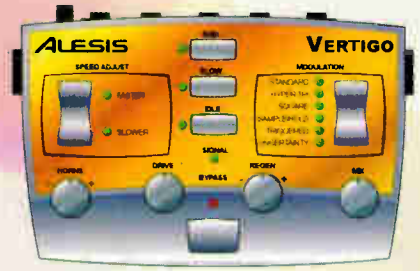
Product Hits From Winter NAMM

By the *Mix* Staff

From January 17-20, NAMM rolled into Anaheim for its annual winter extravaganza of musical and audio goodies. In this post-9/11 era, the art of predicting tradeshow success is somewhat uncertain. The New York AES show in December had a good turnout, but attendance at CES just a week earlier—a bellwether of consumer spending—was substantially down.

Yet NAMM bucked this downward trend with a reported record-setting attendance of 65,490—slightly above last year's figure. The exact reasons are unclear; perhaps the music industry is less recession-prone than other consumer markets, or maybe the public is attracted by cheaper, easier-to-use high-tech toys for making music. In any case, aisles at the Anaheim Convention Center were packed all day, as was the Hilton bar by night, and, judging by the comments of most exhibitors, sales were up, up, up.

One interesting trend was the complete turnaround performed by many companies that struggled financially in 2001. **Alesis** (www.alesis.com) came out kicking with 21 new products including two keyboard synths (QS8.2 and QS6.2), a 96kHz upgrade kit for its HD24 disk-based 24-track, and a slew of new outboard goodies. **Akai** (www.akaipro.com) has completed its DPS24 24/96 workstation (profiled on page 50) and the company unveiled new-generation MIDI systems, including the rackmount Z4/Z8, rackmount 24/96 samplers and the hot MPC4000 MIDI Production Center (see details later in this article). **Mackie** (www.mackie.com) pulled out all the stops, with 23 product debuts (not including 22 new drivers from its RCF speaker division), including the $2,499 SDR24/96, a three-rackspace disk recorder with 24 simultaneous channels at 24-bit/48kHz or 12 channels at 24-bit/96kHz, an internal HD, drive bay for pull-out removable drives, 192 virtual tracks, nondestructive cut/copy/paste editing and SMPTE/MIDI sync. Mackie also launched two mixers, studio monitors, sound reinforcement speakers and a totally new 24/96 Soundscape DAW.



Alesis ModFX Vertigo

WORKSTATION NEWS

With most people announcing 24/96 systems, **Digidesign**'s release of the 192kHz Pro Tools|HD was big news. The high-definition system (costing about the same as a PT|24 MIX 888|24 system) is based on enhanced hardware for improved DSP, more extensive routing and I/O options, as well as improved fidelity. (For details, go to www.digidesign.com or check out the "Technology Spotlight" in last month's *Mix*.) The list of third-party developers releasing plug-ins for the new HTDM platform is constantly expanding. In other Digi news, the $495, all-in-one Mbox is a 2-channel 24-bit USB peripheral with S/PDIF, hi-Z and Neutrik Combo I/Os, two Focusrite mic pre's, insert points and a headphone out, bundled with Pro Tools LE.


RØDE NT4

Digi's Pro Tools|HD generated a 192k buzz at the show; while many manufacturers said that they had products coming down the line, we saw a couple real pieces of hardware: **Lynx**'s (www.lynxstudio.com) L22 PCI interface offers up to a 200kHz sampling rate, with two channels of balanced analog I/O, 24-bit converters and a stated dynamic range of 115 dB. And **Ego Sys** (www.egosys.net) announced the WaMi Rack 192L 4-in/8-out interface, and the 192 Series of 24-bit/192kHz PCI interfaces, which—starting at $199—may well win the 192k low-price award!

Steinberg (www.steinberg.net) showed VST System Link, a new technology using existing digital audio cables and protocols like ADAT, TDIF, AES/EBU and S/PDIF to connect computers using ASIO 2.0, distributing computational needs among the systems. VST System Link is explained in detail in the February *Mix*. Steinberg also demoed WaveLab 4.0, featuring ASIO support and a new set of plug-ins; and Cubase VST 5.1, with three new VST instruments and 11 new VST effects.

Emagic's (www.emagic.de) Logic Audio 5 is ready to ship, and should be available by the time you read this. The upgrade—which lists a new automation system, 50 plug-ins and integrated synthesizers among its top features—was shown in a futuristic booth layout with the Logic Control.

Syntrillium (www.syntrillium.com) released its biggest upgrade ever for Cool Edit Pro. Version 2.0 features real-time effects, track EQ, Disk-At-Once CD burning, loop-based composition and support for MIDI and video playback. Syntrillium also announced a hardware unit, the Red Rover USB multitrack remote-control interface.

PreSonus (www.presonus.com) licensed Yamaha's mLAN FireWire audio-networking protocol for its recording products, beginning with the PreSonus FireStation. A PC recording interface that's expandable to a 48-in/out system, FireStation has the award-winning preamps and converters of the DigiMax line, with mic/line/instrument inputs, S/PDIF I/O, analog line outs and three mLAN ports. Also new, the FireStation Lightpipe allows ADAT optical and MIDI interfacing to any existing mLAN system.

Companies are announcing Mac OS X compatibility. BIAS, Propellerhead Soft-


Mackie SDR24/96

ware, Bitheadz, Ableton and Edirol were among those showing "carbonized" versions of their products. BIAS's (www.bias-inc.com) OS X-ready Peak 3 has improved sample-rate conversion, with Pow-r dithering algorithms and comes with BIAS's new Freq 4-band paragraphic EQ. (A 10-band version, SuperFreq, is available as an OS X-native VST plug-in.)

PLUG-INS

It wouldn't be a NAMM show without a dozen or so cool new plug-ins. Two new bundles from Waves (www.waves.com) captured attention. The new Masters Bundle includes the Linear Phase EQ and Multiband and the L2 Ultramaximizer. The Platinum Bundle has a whopping 25 tools, including Linear Phase EQ, Multiband, the L2 and the Renaissance VOX, Bass and DeEsser.

UniversalAudio (www.uaudio.com) has two new Powered Plug-Ins, both free for registered UAD-1 users. The Pultec EQP-1A models the Pultec Program EQ, and includes all of the features of the original; and the Nigel Guitar Processor offers gate/compressor, phaser, mod filter, envelope follower and other multi-effects for a variety of guitar tones.

Cycling '74's Pluggo 3.0 is here, with 19 Essential Instrument plug-ins for RTAS, MAS or VST, including additive, wavetable, FM and granular synths, theremins, drum and percussion synths, wave shaping and many more. Visit www.cycling74.com for the complete rundown.

Three new CreamWare (www.creamware.de) plug-ins are: OptiMaster, a normalizer, multiband expander, multiband compressor and multiband limiter in a single unit; PSY Q, a psychoacoustic EQ with integrated stereo expander, bass compressor and SoftClip; and the Vocodizer vocoder, with 22 filters and internal synth with 128 waveforms.

Professional Sound Projects (www.pspaudioware.com) showed a bunch of plug-ins for Mac and PC, but one of the coolest was PSP PianoVerb, which emulates the reverb created by piano strings. The best part? It's free!

OUT-OF-THE-BOX SOLUTIONS

There are several companies now offering pre-configured, application-specific PC solutions. Carillon Audio Systems (www.carillonusa.com) unveiled its new AC1 line of purpose-built PCs for audio applications. The AC1 can be paired with any number of popular software suites. Out-of-the-box systems begin at $1,599; custom units start from $1,119. Sound-

SOME YOU MAY HAVE MISSED

At any show, there's always something cool you overlooked. Here are some of our faves...


Akai MPC4000

Akai MPC4000

Akai's ultimate MIDI Production Center, the MPC4000 offers 24-bit/96kHz resolution, 4-channel effects, 192 dynamic 6-pole filters, mic inputs, turntable input, MIDI and SMPTE I/O, SCSI port, internal 20GB EIDE HD and an empty bay for a CD-R or Zip drive. A USB-host port supports a QWERTY keyboard or USB floppy, Zip, CD-R, HD or MO drives. A 6-inch LCD, Q-Link interface and ak.Sys network/control software offer enhanced control/file management via Macs or PCs. Super! www.akaipro.com

Apogee Mini•Me

Big punch/small price: Mini•Me packs two channels of Apogee 24/96 conversion, mic preamps (with phantom power), UV22™ 20/16-bit outputs, Soft Limit and Push-IT™ compression, with AES/EBU and S/PDIF digital outs, USB I/O and headphone monitoring—all in a rugged, portable, ½-rackspace, AC/DC-powerable box retailing at $1,395. www.apogeedigital.com

Korg BX-3

Korg's CX-3 organ rocked; now here's the one you really wanted. The BX-3 has dual 61-key manuals, two sets of nine drawbars, a choice of vintage or clean tone, keyclick control, 128 editable presets, tube-amp simulation (with overdrive), MIDI In/Out/Thru, rotary speaker simulations and a matching wood stand. www.korg.com

Line 6 GuitarPort

At first glance, it's a futuristic guitar POD, with ¼-inch input, selectable classic amp models, digital guitar effects, and analog, USB and headphone outs. Beyond its obvious use as a direct-to-PC front end, GuitarPort also offers a low-fee membership to an online service where you can take lessons, work on your chops, check out forums and jam with mix-minus-solo tracks featuring world-renowned bands. www.line6.com

Motion Sound MS-14SN

Famous for its suitcase-sized rotary speakers, Motion Sound now makes an unpowered, dual-rotor (12-inch woofer and upper horn), 26x20x17-inch system with passive crossover and fast/slow/stop footswitch jack. Multiple units can be driven from a single power amp, and the cabinet is slotted to simplify studio-miking possibilities. Retail: $1,099. www.motion-sound.com

Primacoustics Freeport

The $149 Freeport is a 24x48-inch acoustic absorber of high-density Primafoam™, mounted on a height-adjustable, free-standing frame. Freeports may be positioned to correct sonic problems in temporary control rooms or as acoustical gobos in studios. www.primacoustic.com

Roger Linn Design AdrenaLinn

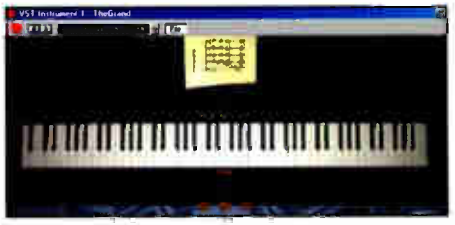
From the father of the digital drum machine and Akai's MPC groove boxes, Roger Linn's AdrenaLinn ($395) takes the stomp box concept to the limit, adding a bank of filters, a looping sequencer, synth-style modulators and amp modeling for a wide array of rhythmic effects. Playing in sync to MIDI or its internal 40-sound drum machine, effects range from traditional (tremolo/flanging/auto pan, etc.) to sequence-driven, dynamically looped filter tones, creating a bazillion sounds you've never heard. Wild! www.rogerlinndesign.com

—CONTINUED ON PAGE 68

Chaser (www.soundchaser.com) showed several PC-recording rigs, including the GigaDaw TK1 (based around Tascam's GigaStudio 160) and the Nuendo-based ProDAW.

EVEN BETTER THAN THE REAL THING

IK Multimedia's (www.amplitude.com) AmpliTude is a guitar amp/effects modeling plug-in. Three sections (amplifier, effects and post-effects) allow 1,260 different variations. First available for RTAS ($399), AmpliTude VST comes out later this year. DigiTech (www.digitech.com) lets bass players in on the fun with BP200 ($199), a bass amp/effects modeling processor with expression pedal, 24-bit AD/DA converters and a dizzying array of amp/effect combinations. Steinberg (www.steinberg.net) expanded the VST umbrella with its (PC-only) Warp guitar amp plug-in. Based on Hughes & Kettner DSM technology, Warp affords VST users myriad combinations of vintage and contemporary guitar amps and cabinets (list $299).



Steinberg VST Piano, The Grand VST

STREAM THIS!

Everyone seemed to have new software samplers or instruments, promising ultra-low latency streaming of huge sound files with amazing polyphony and clarity. Native Instruments (www.native-instruments.com) unleashed the Kontakt sampler, which works as a stand-alone application or as a VST, DXi or MAS instrument. Main features include real-time granular time-stretching and resynthesis; tempo-synched sequencers, LFOs and multistage envelopes; and an integrated loop editor. Famed for its hardware samplers, E-mu (www.emu.com) announced Emulator Soft, which works as a stand-alone or VST instrument, offering all the functionality of a hardware sampler. The program can also edit and catalog E4 samples. Creamware's (www.creamware.de) Power Sampler II adds independent control over pitch, time and formant. The VST-compatible program is $665. BitHeadz (www.bitheadz.com) merged the features of Unity DS-1 and Retro AS-1 with the release of the $649 Unity 3.0 Session for Mac OS 9 and OS X. Unity 3.0 Session combines sampling, synthesis and modeling into a VST, MAS, RTAS DirectConnect-compatible instrument. Steinberg (www.steinberg.net) is making a play for Steinway's clientele with the new VST Instrument The Grand VST, which contains over 1.3 GB of grand piano samples with a simple, clear user interface. Applied Acoustics Systems (www.applied-acoustics.com) updated its flagship with Tassman 3.0 ($299), a software synth based on physical modeling and modularity. The program works stand-alone or within a VST, DXi, MAS or DirectConnect application. Also new from AAS is the Lounge Lizard electric piano, with 24/96 resolution and extremely low latency. It works as a plug-in with a wide array of native PC and Mac systems.

LIVE SOUND AT NAMM

Over the past few years, NAMM has become a major showcase for pro sound reinforcement products. Here are a few that caught our eye.

Allen & Heath (www.allen-heath.com) is now shipping its ML3000 dual-function FOH/monitor console, featuring eight VCA groups, four audio groups, eight pre/post-switchable auxes, eight mute groups, LCR panning, 8x4 matrix, and snapshot VCA/mute automation via a PC and 24/32/40-channel versions.

Audio-Technica's (www.audiotechnica.com) Artist Elite Series handheld mics include the top-end AE5400 cardioid condenser ($579) with a 1-inch capsule based on A-T's 4050 studio mic; the $439 AE3300 puts the sound of A-T's popular 4033 into a handheld package. Cardioid or hypercardioid dynamic models ($289/each) are also offered.

JBL's (www.jbl.com) Soundfactor™ line brings JBL performance to new levels of affordability, with the $379 SF15 (15-inch, two-way) and $499 SF25 (dual-15, two-way) FOH cabinets, and a complementary 12-inch, two-way stage wedge.

Mackie Designs' (www.mackie.com) DFX Series of 12- and 6-channel mixers are designed for the entry-level market: The DFX•12 is $479; the DFX•6 is $379. Both include 16 digital multi-effects, 5-band graphic EQ and an onboard vocal elimination circuit for karaoke use.

PAS (www.pas-toc.com) debuted its "plug-and-play" RSLA FOH Line Array System, a package with everything you need (less console, mics and outboard toys) for handling venues up to 10,000. It includes 16 RS-LA dual-15/co-ax line array speakers, cables, racks, amps, processing and flying hardware.

SLS's (www.slsloudspeakers.com) $550 US8190 is an ultra-compact (11.5x18.5x8-inch), low-profile wedge monitor with 8-inch woofer and 5-inch ribbon tweeter. Smooth, sweet and loud, with 115dB continuous SPLs.

Soundcraft MH4

Soundcraft's (www.soundcraft.com) MH4 is designed for FOH, monitor or shared FOH/monitor duties, in 24- to 56-input versions—plus four stereo input modules that can be moved and swapped with any mono input on the board. Priced from $23,995, the totally modular MH4 offers 20 aux buses, eight VCA and eight mute groups with snapshot automation, true LCR panning and outputs, and integral 20x8 matrix.

Wharfedale (www.wharfedalepro.com), known for its high-end hi-fi gear, now markets Topaz consoles and offers a full line of pro and MI P.A. products, ranging from the $99 VS-10, a 10-inch, two-way box (the VS15 two-way, single-15 is only $169 retail!) to the $1,189 LIX-215FR, a trapezoidal enclosure with dual-15s, a cone mid, titanium-compression driver HF and flying hardware.

Versatile, concert-quality sound takes center stage.

QRx Loudspeakers
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In any performance space, nothing matters more than the quality of the sound. Electro-Voice® QRx™ loudspeakers and Precision Series™ modular amplifiers deliver the clarity, fidelity, and power you'd expect from Electro-Voice concert systems. With four full-range speakers and two powerful subwoofers, the QRx family fills a wide range of applications, from small clubs, to soaring concert halls. Like all other Electro-Voice products, QRx loudspeakers and Precision Series modular amps give artists and engineers the assurance that their best performances will always come through, front and center. For more information, call **800-667-3968**, or visit **www.electrovoice.com**

Step Up To Electro-Voice®

STUDIO ESSENTIALS

The $1,999 **Behringer** (www.behringer.com) DDX3216 32-channel digital mixer features 16 buses, eight aux sends, 12 preamps and dynamic automation of all mix parameters, including 100mm moving faders. Standard are four onboard effects processors, 4-band parametric EQ and dynamics on every channel, plus card slots for TDIF, ADAT and AES/EBU I/O.

RØDE (www.rodemicrophones.com) debuted the NT4, a stereo mic with two ½-inch capsules in an X-Y configuration; the unit includes custom stereo cables with both XLR and ¼-inch connections. **Royer** (www.royerlabs.com) launched the $5,500 SF-1V, a vacuum-tube ribbon mic designed for choirs, orchestras or other distance-miking situations. **B.L.U.E.** (www.bluemic.com) added the $1,699 Dragonfly Deluxe, a spiffed-up version of the standard Dragonfly. **CAD** (www.cadmics.com) showed its new instrument mics, including the long-awaited D60LF neodymium kick mic.

Syntrillium Cool Edit Pro 2.0

Mackie's (www.mackie.com) HR624 studio monitors ($649/each) are biamped (100 + 40 watt) units with a 6.7-inch woofer, rear passive radiator and 1-inch aluminum dome tweeter for a 50 to 20k Hz (±1.5 dB) bandwidth. THX™ PM3-certified, the HR624s can be used for stereo or 5.1/7.1 surround systems, with/without Mackie's HRS120 400-watt subwoofer ($1,499). Need lots of LF? The M118 from **KRK** (www.krksys.com) is a passive, three-way main monitor with an 18-inch woofer, 7-inch cone mid and 1-inch horn-loaded tweeter, offering performance down to 19 Hz. The 7000 Series from **Genelec** (www.genelec.com) consists of four powered subwoofers (8/10/12/dual-12 inch), all using the company's LSE technology that eliminates nonlinearities from port turbulence for a smooth "laminar flow" of LF energy from its rigid, tuned enclosure. The 10/12/dual-12 models include full bass management for 5.1/6.1 surround applications.

GOING OUTBOARD!

Focusrite's (www.focusrite.com) OctoPre is a one-rackspace box with eight discrete transistor mic preamps, two DI inputs, eight compressor/limiters, and analog or optional 24/96 digital outs (AES, S/PDIF and ADAT Lightpipe). Designed by Rupert Neve, the DMCL Dual Mic-Amp Compressor/Limiter from **Amek** (www.amek.com) has two mic and line amps, DI inputs, variable high/lowpass filters, dual compressor/limiters, and simultaneous AES/EBU, S/PDIF and optical outs. Retail is $3,995, or $2,995 *sans* digital ports. Bargain-priced at $649, the **Aphex** (www.aphex.com) Model 207 stereo preamp combines the award-winning tube circuitry of the Model 107 with DI inputs and Mic-Lim™ limiting. Checking it out with an acoustic guitar, it was immediately apparent how much punch and clarity the 207 provides. I need a rack of these!

Got neo-vintage? The 2108 mic/instrument preamp from **Universal Audio** (www.uaudio.com) uses discrete, solid-

emagic
Technology with soul

Music Production
Soft- and Hardware

successful by design

Logic Platinum 5
Logic Control

Logic Platinum 5 and Logic Control set the new standard by which success must be measured. Engineering experience, inspiration and invaluable input from professional users around the world combine to make a highly-regarded music production system even better. The superiority of the Logic Platinum 5 software becomes even more apparent when connected with Logic Control and Logic Control XT hardware. With hands-on access to hundreds of MIDI and audio functions, this is a peerless combination designed to grow along with your creative needs. New automation, 11 new plug-ins, hardware independent audio scrubbing, renowned POW-r dithering and enhanced functionality in the score and MIDI editors are just some of the innovations in Logic Platinum 5. A range of optional software instruments, including the new ES2 and EVOC20, round out a music and audio production system designed to let you work faster, achieve more success, and have more fun.

state, Class-A circuitry based on the amplifier in the legendary 1176LN compressor/limiter. Retail is $1,695. **Chandler Limited** (www.chandlerlimited.com) offered a sneak preview of its latest re-creation—this one is a classic EMI console compressor in a rack chassis. The $1,499 MP-2 stereo tube mic preamp from **A Designs** (www.adesignsaudio.com) has Jensen input and custom output transformers and 10k/600-ohm output impedance switching.

Lexicon's (www.lexicon.com) MPX 110 has 240 24-bit, dual-stereo factory effects including pitch, 5.7-second delay, modulation, and legendary reverbs with independent processing on each input and analog and digital (S/PDIF) outputs. Retail: $329!

The coolest effects at NAMM: The **Alesis** (www.alesis.com) ModFX line, with 14 different—some *very* different—stereo units such as Smashup, Nastify, Crush and Metavox are retailing at $129 each. The compact ModFX units have 9-pin link ports on either side of each box for passing digital audio, clocking and power between ModFX units. (Each has analog I/O as well.) Effects range from modulation effects, filters and chorus, to harmonic enhancers, compression, vocoder, distortion and more. Alesis also previewed PicoVerb, a diminutive ¼-rack-space box with 16 reverbs and effects, priced at $99.

NEXT TIME...

There were plenty of other hip products at NAMM, and we'll present more of these in our new-products columns in future issues. Meanwhile, NAMM returns to Nashville during July 19-21, for Summer Session 2002. Mark your calendars now! ■

HITS YOU MAY HAVE MISSED

—FROM PAGE 63

Tannoy Ellipse

The coolest monitor at NAMM was Tannoy Ellipse, a three-way near-field in an elliptical—no parallel surface—cabinet with either an 8- or 10-inch Dual-Concentric driver and top-mount super-tweeter, offering a 40kHz bandwidth that's perfect for 96/192kHz production. George Jetson would love the wayout look! www.tannoy.com

Tascam PocketStudio 5

This digital 4-track boasts 100 multi-effects, an onboard synth module and MIDI sequence player. Compositions can be stored to Compact Flash media or mixed to MP3 format and offloaded via the USB port. Also standard are track bouncing and copy/paste editing of audio and MIDI tracks. This battery-powered, studio-in-your-hand includes a built-in condenser mic, AC adapter, headset mic and 32MB Compact Flash card. www.tascam.com

DPS24 DIGITAL PERSONAL STUDIO

From mic-pre to CD...

- 46 channel, 20 bus digital mixer with 8 subgroups and 4 stereo FX returns
- 100mm touch-sensitive motorized faders
- 25 analog inputs (including 12 x XLR combo)
- 8 channel digital I/O plus 16 channel expansion option with ADAT sync
- Q-Link Navigation
- Q-Channel multi-function channel strip
- Dynamics processor for each mixer channel
- Dynamic and Scene automation
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- Each channel features 3 band sweepable low and high shelving EQ and a fully parametric mid EQ
- 5.1 surround mixing and monitoring
- 60GB internal IDE HD
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- 16/24bit uncompressed recording
- 32/44.1/48/88.2/96kHz sampling rates
- Stereo TrackView in edit mode plus channel linking
- Wordclock standard
- Extensive editing features including: Timestretch, Pitch Shift, Reverse, Normalize and BPM Matching
- 56bit effects processor for 24bit/96kHz applications includes: Reverbs, flange, phase shift, pitch shift, delays, rotary speakers, auto-wah, touch-wah, and a realtime vocal pitch corrector
- Effect library function to catalog favorite effects parameters for easy reference

ak.Sys.

24bit 96kHz

Q-link

AKAI professional

akaipro.com

Akai Musical Instrument Corp., 4710 Mercantile Dr., Fort Worth, TX 76137 Ph. 817-831-9203 Fax 817-222-1490

ON THE ROAD WITH

IN THE STUDIO AND

PHOTO: CHRISTIAN LANTRY

From left, Brendan Hill (drums), Tad Kinchla (bass), John Popper (vocals/harmonica/guitar), Chan Kinchla (guitar), Ben Wilson (keyboards)

Blues Traveler

By David John Farinella

Rules, as they say, are rules. During the recording sessions for Blues Traveler's seventh release, *Bridge*, engineer Trina Shoemaker was the one making the rules. "There was a moratorium on guns in the control room. I didn't want smoking in the control room," Shoemaker states. "John [Popper] did both. He's naughty. Most people will listen to me if I say, 'No smoking in the control room.' But John would come right up there and blow cigarette [smoke] in my face." The next rule came after the band returned to the studio after an afternoon basketball game. "We had to have a 'no stinky guy in the control room' rule, too, which was for my benefit. That's what happens when you have a girl around."

Before the band—which recently added keyboardist Ben Wilson and bass player Tad Kinchla to the lineup of John Popper on vocals, harmonica and guitar, lead guitarist Chan Kinchla and drummer Brendan Hill—joined Shoemaker at The Plant in Sausalito, Calif., they spent three weeks in pre-production. It was a time to hone the songs, says producer Matt Wallace. "I'm a very strong proponent of pre-production, because I think that's where records can be made or broken," he explains. "That's also where we worked on the grooves, arrangements and parts. The process of making a record, once you have your map, is relatively uncomplicated."

IT'S A BRAND-NEW DAY FOR THIS SEASONED JAM BAND

During those pre-production sessions, Wallace started with a very relaxed, sitting-on-the-couch type of atmosphere. Hill was on a baby drum kit, and the rest of the band was playing through small amplifiers. "We had everything kind of toned down, which is really a nice way to do pre-production," Wallace says. "That way, you can talk about the music and there's minimal ear fatigue. Then, once you're feeling confident that you've got it, it's, 'Okay, let's strap on the big loud instruments and take it for a spin.'"

Because Blues Traveler is, first and foremost, a touring band (see accompanying article, "That Travelin' Sound"), they brought their entire rig with them to The Plant. "When the gear showed up in San Francisco, I just panicked," Shoemaker recalls. "I said, 'I can't do this, I should just go home. There are too many cases, not enough room.' I asked John's tech, 'Okay, for John Popper's harmonica, how many outputs do I need?' I'm thinking like a mic and a DI or something. He said, 'I think it's nine.' I need nine tracks to go to tape with? Nine whole tracks of Popper harmonica?" That was just the beginning, though, because there was also the Popper guitar rig, Chan Kinchla's two amps, Wilson's array of piano, Wurlitzer, Clavinet and B-3, not to mention the rhythm section and vocals.

It was important to have all the instruments available, Shoemaker says, because the goal was to capture as much as possible live in the studio.

PHOTO: CANDACE HORGAN

That Travelin' Sound

BY CANDACE HORGAN

Formed in 1986 in New Jersey, Blues Traveler, led by harmonica wizard John Popper, quickly took New York City clubs by storm and landed a major-label record contract in early 1990. Their debut album, *Blues Traveler*, sparked a resurgence in jam music around the country. By 1995, the band had scored two Top 10 singles, "Runaround" and "Hook," and their continuous touring won them legions of fans.

While the band has gone through several changes, many of the crew has stayed the same. Front-of-house engineer Bo "Obi-Bob" Mahoney has been with the band since the early days; he started originally as the guitar tech. "I've been with the band since '89-'90," he says. "I was actually working at a club in New York called Kenny's Castaways, as were [former soundman] Rich Vink and Dave Swanson, who produced the *Save His Soul* record. Traveler used to play there all the time, as did Spin Doctors and Phish, and we all mixed for them. Rich was the first guy hired out, and when Traveler graduated to needing another guy, I signed on as the guitar tech. I got the 'Obi-Bob' nickname a couple years later, when *Travelers and Thieves* came out and John decided to give everyone *Star Wars* nicknames."

Mahoney uses a Midas XL4 console with 56 total inputs, 40 mono and eight stereo, all of which are used. "The stereo inputs are for Ben's piano feed and the Leslie top. The other stereo feeds are a pair of audience mics on the stage, which I run to a board tape, and a pair of mics out front that I also run to board tape. I love the mic preamps in the Midas, which sound fat and warm; using those with a little compression, I'm in good. Then if I have VDOSC, I'm set. We are trying to get VDOSC for the band; we did a show with String Cheese Incident in Steamboat Springs, Colorado, and their engineer [Jon O'Leary, see *Mix* March 2001] time-aligned the P.A. to the kick drum, and it tightened up my low end so much. Sometimes the low end can get floppy, but time-aligned like that it was slamming. I didn't touch my EQ that day. When Brendan plays his acoustic drum kit, he has a stereo feed on the overheads."

—CONTINUED ON PAGE 78

"Every song on the record, we attempted to have bass, drums and the whole milieu of keyboards be the take of those instruments," she explains. "When we finally said it was a master, it was, because everyone was happy that the drums felt great; the bass was cool—it just needed a few punches; piano sounded amazing—just a few fixes; guitars are good, but we're going to redo one whole track; and John's harmonica is happening. For the most part, once we established a basic track it would already have bass, drums, keyboards, guitars, most likely a damn-good scratch vocal, and Brendan would put percussion on right away."

SQUEEZING THE VOCAL

To capture Popper's vocals, Shoemaker used a Neumann U67 for tracking and overdubs. She turned to the Neve mic pre's in the console, as well as the combination of a Distressor, an 1176 and an LA-2A. "John sings loud," she explains. "I squeeze vocals. I know a lot of people don't; I just do. I just squeeze 'em to death. It sounds good and why not? We're competing with rock 'n' roll elements, so you have to treat it like a rock 'n' roll element, and a voice needs to be treated like a kick drum, where all of his sounds need to be compressed into an area that will fit in the song, but always be present."

Wallace was impressed during Popper's vocal dates. "It was really interesting, because getting him up to the microphone can take a lot of effort sometimes," he says. "He even admits that he's one of the laziest guys, but when you get him to the microphone, he is outstanding. It's like in three takes, wow! It's such an interesting dichotomy to me, to find someone who's so incredibly gifted and has such abilities, but you have to work so hard to get him to the point where he's going to let loose and let the stuff out. Great phrasing, pitch, everything."

As for the nine tracks of harmonica—distortion harp, clean harp, Leslie harp, effect harp and phase harp are among the Popper choices—Shoemaker had her hands full. "He would step on pedals, but he would send them through different processing units and ultimately different outputs," she recalls. "So that's why we had to have a whole section of the console dedicated to it. And John would say, 'It doesn't matter, because this harp track will be just a scratch track.' I thought, 'Baloney, you're going to play really great,

and then Matt Wallace is going to be looking at me like, 'You got that, right?' So I just made sure even though he said we'd never use any live harp tracks, we used all live harp tracks, almost exclusively."

WHICH GUITAR?

Guitarist Chan Kinchla came into the studio with his Soldano tour rig, which was augmented by an assortment of Ampeg, Vox, Fender and Marshall amplifiers. He would run two concurrently, going through a box that simply read Amp A, Amp B or both. According to Shoemaker, one was a super-distorted channel and the other a clean channel. "I had two mics on each cabinet in its enclosure," she says. "The mics were bused together through a compressor, then to tape. So, at any time Chandler had guitar one, guitar two and I would never know which one he was going to play, so they were both up at the console, both up in his headphones. And they were both always going to tape.

"I figure two mics are better than one, because you get two mics' worth of sound and then you put it together with a compressor," she adds. "Again, somebody would argue with that and say, 'Technically, that's not right.' But it sounds real good. It comes up fat, and if one mic shits out on me, I can hear it and I can kill it, and I've still got a mic going to tape. I like to put tube mics on guitar amps, because they sound great. At the console, I didn't always use both mics; I'd put up the 47 and think, 'Hot damn, sounds great, done.' But if it sounded a little bright, then I'd throw up a 421 to add bottom end. I don't like to EQ guitar sounds, because I'm convinced that I can't make it sound better with an EQ. I can in the mix, but if you're recording it and it's just not sounding good in there, the fact is that you have to go back out there while he plays, and it's really loud and you're going deaf, and you have to listen to what the amp sounds like."

14 MICS, ONE KIT

Shoemaker approached Hill's drum kit much like she did the rest of the band: Mike just about everything possible, add a bit of compression to the kick drum and don't touch the EQ. In all, she says, they used 14 mics on the kit. "It was probably overkill at some point," she admits with a laugh. The toms and snares got top and bottom mics, the kick drum got a close and far mic, the cymbals and room were miked, and she threw in "a crazy-sounding mic" for good measure. "I blend them into sets or into one mono kit if I feel like it," she explains. "I like to have a lot of drum mics available at the console, because that way, if I have to change the drum sound, they can put in a new drum kit, I can slightly revise my mic blends or my choices and have a brand-new drum sound with very little effort and no moving around of mics." Snare drums got 57s, there was a 451 on the hi-hat, 421s on the toms, a U47 in the room, and a D-112 inside the kick drum and a U47 on the outside.

Hill's rhythm partner, Tad Kinchla, also brought in his live rig, which included "some complicated shit with some preamp box and a speaker cab and a sub cab," Shoemaker says with a laugh. "That was cool, but I wasn't familiar enough with it to right away want to trust it. So I asked him if he would mind if I had him run just a regular old Ampeg B-15, because I'm familiar with that. Then I gave him his live rig, which consisted of his DI out of his preamp and a combination of the cab and the sub cab blended together." Typically, all three tracks were used. "Once again, it was overkill, but I didn't want to say to him, 'You know what? We're going to do things my way and my way is a B-15, so forget your rig.' He was comfortable with his rig, but just to humor me, 'Do you mind if I run this little extra-warm lovely bass cabinet?' His rig was cool, but it was too big for recording. On some songs, his sub cabinet mixed in with his bass cabinet was the perfect answer and the B-15 was turned down, but mostly all three went to tape."

Adding Ben Wilson's keyboards to the Blues Traveler sound was a new experience for the entire band, but it wasn't a struggle for Shoemaker. She miked the heavily blanketed piano—which was in the same room as the drums—and miked the Leslie cabinets and Clavinet. "He had a whole pedal board for his Clav and his keyboards, so basically I had an amp and a DI sound for the Clav and the Wurlitzer. So, if it was going to be an amp sound, I was ready; if it was a DI sound, I was ready," she says. "Again, EQ to taste when it was necessary, but mostly just staying out of his way. I just made sure that all of the keyboards that he could possibly reach were going to tape—if he stretched across the room and touched that crazy-looking Casio keyboard, it was on tape."

EMOTION ON TAPE

Although The Plant sessions were recorded right to tape, the band used Pro Tools—for the first time—on a pair of songs, "Pretty Angry" and "You Reach Me." The band had performed three ver-

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sions of "Pretty Angry," which is about the death of bassist and founding member Robert Sheehan. But none were hitting the emotional mark they were feeling. Hill, who brought in his own Pro Tools rig, put together two takes for the final version. "No one really thought we had the take, no one was 100 percent happy with it," Hill recalls. "I worked on it overnight and brought back a rough CD the next day, and everyone said, 'Wow, that's what we wanted.' It was something that was intimate at the beginning, and then the piano comes in and it's very moving, and then the voice comes in and then the whole band comes in. Then the rest of the take, which is the one that we wanted, built up with a really nice emotional vibe to it."

From Wallace's seat, finding the right time to record that song was tough. "Pretty much all the songs were pretty easy birthing, except for 'Pretty Angry,'" he says. "The day after the anniversary of Bob's death—they had gone out on a Sunday and sprinkled his remaining ashes on San Francisco Bay—my instinct told me, 'Okay, they've got this residual emotion in their bodies. Monday is going to be the day to attack "Pretty Angry."' I think my instincts were right, because I could tell they were all still digesting and trying to understand what happened the day before. We spent a good part of the day going after it, and toward the end of the day, once the emotional depth had settled into all our psyches, that's when we really got a take."

Certainly, the passing of Sheehan hung over the band during the recording process and, to be sure, the tours they had staged before the recording of *Bridge*. Hill admits it was emotional for the band to be working without him. "It was strange going into the studio or throughout the whole process from rehearsing to preproduction without having Bob there," he says. "There wasn't a shadow, but you felt like there was a presence there just kind of checking things out. He contributed a lot to the dynamic and feel of the band, but more than that he was one of our schoolmates and friends. I think it's hard to carry on without bringing some of his energy with you, and I think we all have that in the back of our minds."

Then again, Hill adds, the band feels a renewed sense of purpose. "The new energy of the new band is a little bit healthier, especially since John's lost a lot of weight," he says. "He's got a lot more en-

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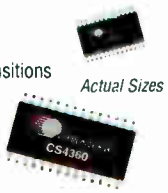

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ergy, full voice, doesn't get tired so quickly, and I think that has a big impact as we move forward. Everyone's excited about touring again and there's no kind of health problems looming over our heads. There's the sadness of Bob's passing, but also the happiness of this rebirth." ■

David John Farinella is a frequent contributor to Mix.

—FROM PAGE 71, THAT TRAVELIN' SOUND

As for effects, Mahoney has a small rack to reinforce what the band does. "I use two TC Electronic 2290s, one for a stereo feed and one for background vocals. It has a 'learn' feature; at every song, I tap out my delay time. A lot of times, they don't follow the set list, so I tap in the beat for each song. I also have a TC M3000 reverb unit for Brendan's drums, and a Lexicon 460 reverb for John's vocals. There is also a Yamaha 990 reverb on John's vocals; I alternate between the Yamaha and the Lexicon for short and long reverbs, depending on the song. I also have a Yamaha Pro R3 reverb on Brendan's drums. I have four Summit tube compressors; I use one on John's vocals, one on Tad's vocals, one on Tad's bass and one on the kick drum. I have seven to eight harp inputs that I put compression on. I use compression more as a limiter than anything else, to keep the top end down. I also have two Klark compressors that I use on Tad's stomp pedals. He sometimes uses the pedals a lot, so I set up a DI before and after the effects so I can control how much of the effects he sends. Sometimes he uses too much, and I lose all of the bottom end. Eighty-five percent of my channels are flat; I don't EQ much at all. The XL4 has high- and lowpass filters on each channel. For instance, with Brendan's cymbal mics, I use the highpass filter to clean it up without using gates. It's a good console."

A big part of Mahoney's current setup involves the use of both Demeter and Randall Silent Speaker cabinets offstage. Explains Mahoney, "John never comes to soundcheck; he always come in later, and Chan's line would really bug John, and he would have to turn Chan down, so I lost all the guitar sound. That's when we started using the Silent Speaker setup. I don't have to worry about John freaking out and making Chan turn down. The only amp onstage is a small one John uses for feedback effects. These cabinets are offstage in little boxes that you don't hear; if I shut the P.A. off, the only people you would hear onstage are John and Brendan. I can isolate them that way so the levels aren't bugging John. Chan has two guitar inputs and two Silent Speaker cabinets. He used to have an A/B setup, but I gave him a stereo pan pedal so he can blend a clean and dirty signal, and pan between the clean and dirty when he wants; I have two Klark compressors on those."

Popper's vocal mic is a Shure Beta 57A, while the other vocal mics are Shure Beta 87As. Mahoney mikes all the cabinets with Shure KSM32s "To me, for the money, those are the best microphones around," he says. "They are like a better 421. It's a good, big condenser mic with a warm flat response. I use them on Chan's guitar cabinets, Tad's bass cabinet, Ben's cabinets and John's cabinets. Ben has a stereo keyboard DI, a Leslie, a Clavinet and a Wurlitzer. He had his Leslie modified so it has a ¼-inch output that he runs into effects like distortion, and sends those to another cabinet. He has Silent Speaker cabinets that I run offstage, and I use the KSM32s on those." Rounding out the microphone setup is a selection of Shures on Brendan's drum kit: an SM91 and a Beta 52 on the kick; SM57s on top/bottom snare; four Beta 98s on the toms; two KSM 32s on overhead left and right; an SM91 on the right cymbal; and SM81s on the hi-hat.

PHOTO: CANDACE HORGAN

Monitor engineer James Lionti has toured with the Traveler since the summer of 2001.

Though Popper's harmonicas are probably the least-expensive instruments to start with, the setup that Popper uses to get his amazing tonal coloration is any-

Blues Traveler

thing but. "I split John's signal to five different places," explains Mahoney. "He plays into a modified Shure SM58 microphone. The mic goes into a Behringer stereo mic preamp, just to split the signal and change the level from mic to line. John considers himself to be like a guitarist, so the Behringer lets me switch the impedance. One side from the Behringer I take a direct out into the Midas at FOH via an XLR. Then the ¼-inch output of that side of the pre goes into a Mesa Boogie amp switcher. From there, I send the first input to John's main two Mesa Boogie Heartbreaker 100-watt heads, the second input to the effects pedals Heartbreaker head, and I have a third send that goes to the little amp onstage he uses for feedback effects. John can play one and flip to the other. Out of the first main head, I go slave and that drives John's offstage Leslie cabinet, which I mike with a Shure SM57. That signal is brought back into his monitors. He has a volume knob on his mic so he can turn the send to that Leslie up or down, and he controls the speed of the Leslie from the mic as well. The other side of the Behringer goes into a rack of effects that we run offstage; he controls it with MIDI pedals and that goes back into his monitors. That way, I'm not stuck with one sound. He can have whatever he wants onstage, since everything is separate. The units he uses offstage are Mesa Boogie Tri/Axis models, which are MIDI-programmable preamps. I use that to control levels of each of his effect's sounds. He uses an Alesis Quadraverb, a DigiTech IP33 harmonizer and an Eventide H3000 harmonizer. I use the pre to control the effects there. From there, I take a stereo left-right to FOH, and I send those to John's monitors."

PHOTO: CANDACE HORGAN

FOH mixer Bo Mahoney started out as the Traveler's guitar tech.

Monitors are handled by James Lionti of Clair Bros. Lionti signed on with the band at the start of the 2001 summer tour. "We prefer a Midas, but the last few tours we used a Yamaha 4k," says Lionti. All of the bandmembers except Popper and Brendan use in-ear monitors. Popper has two monitor wedges and two sidefills, and Brendan has a pair of wedges and a sub. "The guys use in-ear monitors, so they don't need to hear the cabinets. It helps with stage volume."

Lionti explains the monitor mixing this way: "Tad has an even mix with the bass on top. Chan's guitar is so loud I don't know how he hears anything. Chan only has one in-ear monitor in place. I find that hard; it would throw me off balance. Ben uses one in-ear and a wedge, and he has a separate mixer for his monitors." ■

Candace Horgan is a freelance writer based out of the Denver area.

BY MAUREEN DRONEY

Brian Gardner

"Big Bass" and Other Secrets From One of Mastering's Best

PHOTO: MAUREEN DRONEY

Just how long is Brian Gardner's discography? Well, pulling up his allmusic.com page results in a list of over 750 credits. It was hip hop heavy Dr. Dre who gave Gardner the handle "Big Bass," so people tend to think of him as purely a hip hop/R&B expert. While there's no question that he *is* expert in the genre, those in the know seek him out for mastering expertise on all styles of projects, from alternative to classic jazz. And among those 750-plus credits are such monster hits as Janet Jackson's *Velvet Rope*, Blink 182's *Enema of the State*, Eminem's *Slim Shady*, En Vogue's *Funky Divas*, Fastball's *All the Pain Money Can Buy*, Smash Mouth's *Astro Lounge* and 2 Pac's *All Eyes on Me*.

And the hits just keep coming. On the day we spoke, Gardner had *six* cuts in the Top 10 of *Billboard*'s Hot 100: Mary J. Blige's "Family Affair," Nelly Furtado's "Turn Off the Light," "Hero" by Enrique Iglesias, "Get the Party Started" by Pink, and two by Jah Rule: "Livin' It Up" and "Always on Time." How's that for a hot week?

Because in person his vibe is so energetic and youthful, it's a surprise to discover just how long Gardner has been tweaking knobs in the mastering business. He got his start cutting vinyl, and early on worked in the studio with such notoriously challenging artists as Creedence Clearwater Revival and the Jefferson Airplane.

Maybe it was those early psychedelic experiences that resulted in Gardner's unflappable demeanor. I've personally seen him sit calm and collected, a lightning rod in the kind of violent storm that sometimes strikes when creative artists hit mastering: that last-chance saloon for changes.

We sat down for this interview in Gardner's suite at Bernie Grundman Mastering in Hollywood. That unpretentious room is where, five days a week, he gets down with DATs, CDs, hard drives and analog tapes of every stripe, turning confusion into cohesion, and individual songs into the complete statement that's an album.

You actually began your career in the mastering room.

Yes, I started in mastering first, then did some recording. I had always had a desire to get into the industry in some form or another. I was trying to get jobs when I was, like, 12! I didn't realize that I couldn't because I was too young! I always enjoyed tweaking—EQ'ing music at home. I always knew you could improve it by adding certain frequencies.

Were you into electronics and building stuff?

No, I just had a basic interest. I played piano when I was young, of course. That's actually something I regret: not having pursued the piano. But I still have the basic skills, and I have all this MIDI equipment at home. I work on it and think I've come up with something good, then I come to work and a client comes in with something they've done...and I just put my track aside.

What was your first break?

Bill Robertson at Capitol helped me get my foot in the door and land a job at RCA Records, where my professional career started. I started out in mastering, but when I wasn't busy I got to go down and second engineer for a lot of big dates. Harry Nillson, the Guess Who, Jefferson Airplane...I was a teenager and it was the late '60s, so it was quite an experience. Huge mega dates with big artists—Henry Mancini, Vic Damone, The Monkees...

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How did you learn to use a lathe?

It was at Century Records, my very first job. It was a custom kind of place, and they cut records for schools and the armed forces. I don't remember the first session I did. I understood the concept—the transfer of mechanical energy to electronic energy through the cutting head—so it wasn't any big surprise to me. I learned from watching it and reading about it; just knowing the process.

Of course, at that time, I wasn't allowed to EQ—back then, you were forbidden to touch what the engineers had done. Your job was just to put it on the disc. "Do not touch this tape; it is perfect!"

And then Creedence Clearwater came along. We kept cutting refs for them over and over, thinking there might be something off on the frequency response. And it still wasn't right. So I broke out the Fairchild limiters and the Pultecs and I tweaked it, and that kind of changed the whole thing—being able to doctor up tapes.

They liked it better.

Oh, yeah. It was a radical difference. And that's really where my career changed. Because, after a few years of mastering Creedence hits, they [Creedence] plucked me out of RCA and I went up to Fantasy for four years.

Fantasy Studios: the house that Creedence built.

I was the first employee there. They wanted mastering in there first, before anybody else moved in. It was '69 or '70. That was another fun part in my career. Living in Berkeley, hanging out, having the Grateful Dead around. It was a great time—going over to Record Plant in Sausalito for the live KSAN broadcasts, hanging out at Wally Heider's Studios with Jack Casady and the Airplane.

And that led to the next phase, because after my four years there, I went to Allen Zentz Mastering, where we ruled in the disco department. We did all the Donna Summer records, the Casablanca catalog. That was really something.

Was doing all that disco music the beginning of Brian "Big Bass" Gardner?

Well, kind of. I did Donna Summer, the Village People and all of the George Clinton stuff. Really, the thing that struck me the most at the time was the different levels of stardom that I was working with. I remember doing the Jackson 5's first record and having Berry Gordy in the room. Having Ike and Tina Turner there, in the room alone with me in the evening. And the Jefferson Airplane memories...seeing Jimi Hendrix loan speakers to them...

PHOTO: DAVID GOGGIN, ©1999

At Bernie Grundman Mastering for Eminem's Slim Shady sessions (L to R): mastering engineer Brian "Big Bass" Gardner; recording engineer Richard "Segal" Hureida; Dr. Dre's director of operations, Larry Chatman; artist Eminem; producer Dr. Dre; and co-producer Mark Bass.

So you learned to "go with the flow" from some very talented and eccentric artists.

Yeah, people say that I find a groove. And that is how I try to approach a lot of the stuff we do today. You can go in almost any direction with a project: You can make it real crunched and bright, you can make it hurt, or you can make it warm, mellow and wide. Usually I just go with what I feel. Most of the time it ends up being what my initial EQ was. [Laughs.] But sometimes we go on a big trip—a big circle—trying different things. And then we end up with the original.

> I use limiting very little. As opposed to what you might think by hearing some of the things I've done! I really don't like to take away attack—I just love that punch. You just have to know by feel what to put in when.

To a lot of people, the mastering process is very mysterious.

Well, a lot can be done here. Today, we have projects where recording goes on for months and months, sometimes in different studios, with different producers and engineers. What we have to do is put it all together and make it come up [sounding] the same.

I do miss sequenced albums. And one mix, one version. The projects we get now are in so many different formats. There are a lot of different things you have to know how to use.

It takes a lot more outlay to equip a mastering room today.

It's just my opinion, but I do think our technology has gone too far sometimes. I mean, who really cares about 26k? Take The Beatles. I don't think there's anything above 10 or 12k on all those great-sounding records of theirs. There's nothing wrong with having the capabilities of capturing that 26k, but it brings in all kinds of other problems. And with our levels today—with having to deal with always operating on the threshold of distortion—well, that's always fun.

Do you mean that people are sending you stuff cut hotter than ever?

No, not necessarily how it comes in; it's just they want the end product to jump. They always wonder, "Can't you make this a little louder?" It keeps moving up and it's got to stop somewhere. [Laughs.]

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I'd like to put out a record sometime that's the lowest out there: "Oh, did you hear that new record? It's so low. It's so cool." But that's not going to happen. Although Steely Dan put out a record that sounded good and it wasn't loud. It didn't have to just slam the levels.

You're talking about losing dynamic range.

Of course. But a lot of today's music is enhanced by taking some of those things out—punching it up and giving it less dynamics. That's the nature of much of the music that's popular—it's just more intense.

It seems like the great mastering engineers all started with vinyl. It gave them an understanding of what's important.

Yes, with vinyl there are certain parameters you have to really be careful of. And sonically...well, sibilance can still be aggravating on CDs, even though it doesn't splatter like it used to on vinyl. Some of the phase things are still important today, even though there are fewer restrictions on CDs.

You still cut vinyl yourself, right?

All the time. Nelly Furtado, Pink, Jah Rule, Dre—they all have vinyl. Even the soundtracks get put out on it. All the majors will usually release a vinyl. Because of the time factor, with albums running 70 minutes, we have to split them up to four sides just to keep the level competitive.

Really, vinyl is a lost art that wants to go away but can't. There are too many vinyl lovers out there. People who are into it miss the sound. And although digital is getting a lot better, I'm still an analog guy, basically. In general, I think bringing some analog in somewhere in a project really makes a difference. Preferably, on the basic tracks.

Although, I've had full digital projects in here lately that amaze me with how good they sound. But then, I've also seen groups come in here with really funky setups that sound fabulous. And then they become stars, money rolls in, they upgrade everything and they lose it—they lose the sound. So you never know.

For a long time, all of you at Grandman avoided using computers.

Our basic philosophy is to stick with the original source, whatever it is. Now, though, we're using the German [computer] system called Audio Q, which is really amazing. Actually, it's one of our secret weapons, so I don't think you should print that. [Laughs.]

Nothing is stock here, everything has been modified. And we've always been very particular and careful. We listen to blanks and hear the difference.

Blanks?

CD blanks. We'll throw away thousands of them if they're not right. We get samples from manufacturers and make tests and A/B. We listen very carefully before we pick the lot that we're going to buy. A lot of people think once you're going D-to-D, it doesn't matter because it's all numbers. But you can hear it. Every step makes a difference, and when you add all the subtleties up, the result is dramatic.

So, yes, we're in the computer age. But there's so much more to it than just the technical part. You can't just sit there at a computer and think you'll make it right. The person sitting there operating the equipment has to be able to feel it to turn the right knobs.

You're also very particular about the consoles here.

Yes, it's all discrete. There are no transformers, and all the equalizers are handmade by Karl Bischof and Beno [Thomas "Beno" May]. In some instances, they've avoided switches. We'll actually change the patches, say to the 1630, or to the computer, to avoid switching and to make the signal path better. It's a pain, but it's worth it.

And, of course, we went through great expense to make sure that, even for the shortest runs, the wire is the best possible. It really is surprising the difference a cable can make.

What do you monitor on?

Our main speakers are Tannoys. And then I have an array of different ones, from NS-10s to KRKs to the new little Yamahas, which DJ Quik just gave me. Those are kind of interesting: They have a switch on them that makes them sound like NS-10s. And they also have adjusters to give you a little more bottom and make them sound better.

They're all just another reference point and for clients to listen on. Really, I depend on the main Tannoys. But I also use KRK 7000s. And little Radio Shack Minima 7s.

SELECTED CREDITS

Beck: *Midnite Vultures* (1999)

Blink 182: *The Mark, Tom and Travis Show (The Enema Strikes Back)* (2000), *Enema of the State* (1999), *Dude Ranch* (1997)

Bone Thugs-N-Harmony: *E 1999 Eternal* (1999, re-release), *The Art of War* (1997), "Creepin on Ah Come Up" (1994)

Cypress Hill: *Stoned Raiders* (2001), *Skull & Bones* (clean, 2000)

Destiny's Child: *Destiny's Child* (1998)

Eazy-E: *Str8 off Tha Streetz of Mutha-Phukkin Compton* (1998), *Eternal E* (1995), *It's On (Dr. Dre) 187um Killa* (1993)

Emperor's New Groove soundtrack (2000)

Eric Benet: *True to Myself* (1996)

Fastball: *The Harsh Light of Day* (2000), *All the Pain Money Can Buy* (1998)

Herb Alpert: *Colors* (1999), *Passion Dance* (1997), *North on South St.* (1991)

How Stella Got Her Groove Back soundtrack (1998)

Ice Cube: *Greatest Hits* (2001), *War & Peace, Vol. 2 (The Peace Disc)* (2000)

The Isley Brothers: *Tracks of Life* (1991), *Spend the Night* (1989), *Smooth Sailin'* (1987)

Mission Impossible 2 soundtrack (2000)

No Doubt: *Rock Steady* (2001)

Prince: "1999" (new master) (1999), *Crystal Ball* (1998), *New Power Soul* (1998)

Smash Mouth: *Smash Mouth* (2001), *Astro Lounge* (1999), *Fush Yu Mang* (1997)

Suicidal Tendencies: *Freedumb* (1999), *Prime Cuts: The Best of Suicidal Tendencies* (1997), *Friends & Family* (1997)

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-**Brad Wood** (Smashing Pumpkins, Liz Phair, Better Than Ezra, ...)

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Those little things? Why are they on the floor?

I like them there. A lot of people have copied me on that. They don't serve any purpose sitting there in your face; it's an in-the-next-room, on-the-radio kind of thing. Sometimes they're turned the other way; I don't care. It's a good reference. I usually listen to them at a low level and you can tell a lot. Unfortunately, they don't make that particular model anymore.

Do people hear things in your room they haven't heard before?

All the time. And most of the time for the better: "Well, I never heard that before, it's great."

Do you listen at home or in the car?

I do still listen to my projects in the car once in a while, if I'm really trying to discern certain things—like long fades. And then I'll try to talk the client into not letting them go so long! Things like that. But you also have to consider the environment of listening at home; the long fade might work there. Noise and traffic are factors, and sometimes I'll listen in the car for balances. I have a jeep and a sports car, so it's, "Let's see, who am I working with today? Oh, yeah, I'll bring the jeep."

Do you listen to radio stations?

That's another thing that I've had the luxury of. Over the years, I've often been able to hear stuff on the radio almost instantly, and to experiment with limiting parameters and with EQ and how it translates. Especially with rap stuff: We'll pick a ref and it'll be on the air in an hour. Some of the big guys can do that. We can hear it right away, and that's been really valuable.

I don't really need to do that anymore; now I pretty much know what goes on and how they limit it to death on the radio. So I've learned what kind

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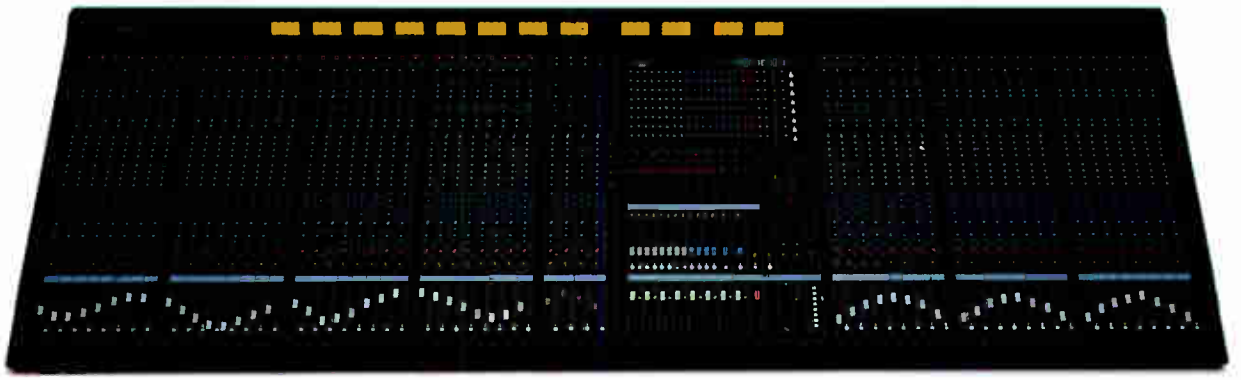

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of limiting you can get away with without it being ruined on the air. I've heard some records—good records—but they end up horrible because there are vocals in your face, and all of a sudden the band comes in and they're gone...you've got to know how to work with it so it doesn't do that.

What converters are you currently using?

We have the DB's and we also still use Apogees occasionally. Of course, how you hit them, and how you hit all the different variables, the EQs, etc., is very important.

But everything goes through an analog process in your room.

Yes. And that's where we adjust it and try to make everything fit together, even though they are from different formats.

You can fix a lot...but what things are unfixable?

> I've had to do percussion and keyboards, bass... all sorts of things in the mastering room. It's fun, actually. Sometimes creative people have an idea at the last minute, and we'll do it.

If a machine was set up wrong. Or if something's been saturated. In either the analog or digital domain, if they just slammed it—if it's just crunched and really distorted—there's nothing to be done about it. You can try and adjust the sonics a bit, but those crunches are always going to be there. Or, sometimes I get projects where it's almost distorting, but not quite, and the mastering process will bring it out. We have to deal with it, and that can be difficult. Sometimes EQ and level adjusting will work, but sometimes it will really need to be remixed.

So the most common problem is too much level, so that the tape is saturated. Not only is distortion the result, but that kind of saturation takes away the attack. It flattens things out. A kick drum, for instance, becomes all mush, so you don't feel the real solid slap to it.

Do you prefer to get multiple mixes of a song?

Occasionally when they want a vocal up that's a help. But to have a lot of mixes of guitar up ¼ dB...I haven't found that useful.

Okay, you're mastering some really hardcore stuff. How do you relate to the lyrics?

You have to appreciate all forms of music. There are good elements to all of it, even hardcore rap. But, actually, when I hear a mix initially, I don't even hear the lyrics. I just hear this whole thing. The lyrics are like another instrument and you've got to place them in the right spot.

Speaking of placing things in the right spot, what compressors do you use?

Well, we've modified most things; they're not stock. But we have Dominators, and an SSL-style limiter, which was handmade by Beno in our shop. Really, I use limiting very little. I don't like to do it. As opposed to what you might think by hearing some of the things I've done! I really don't like to take away attack—I just love that punch. But that SSL is a good one when I do limit. And I bought a Waves L2 when I was over in Germany last year—an Israeli electronic piece of gear. Once in a while, I'll fire that thing in and it works wonders.

You just have to know by feel what to put in when. Some limiters will deceive you and you won't hear them suck, but they will still be holding back desirable transients. You always have to A/B to the original, and make sure you're improving it.

I see a Spatializer among your gear. What do you use that for?

It's a modified Spatializer, which I will use when the mix is kind of dead. I've almost been able to create a miracle with it, on occasion, playing with space and width and then re-EQ'ing. It's a fun tool to have.

Do you have an overall philosophy for the work that you do?

Let's see...that would be: "Compress till it sucks, then back off ¼ dB." [Laughs.] I'm not necessarily a technical person; I go by my ears. To me, the most important thing is what's coming out of those monitors. That should also be the most important thing to the mixers—what they're listening to. Some people get caught up in the technical aspects of a mix, and they may have a great-sounding mix in their studio, but their monitors are screwed. And that's where we have to come in to fix it. To them it was probably great. But sometimes it's hard to explain that to people.

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Do artists and producers generally come to your sessions?

It's a mixture. Once they've done a project with me, they will often just send the masters in. But usually the bigger groups will come. They care. And I like it when they care. No Doubt was just in here—the whole group. That's kind of neat when they're interested in having a part in even the segues and spaces between songs.

It's the last chance.

It is, and I've had to do percussion and keyboards, bass...all sorts of things in the mastering room. It's fun, actually. Sometimes creative people have an idea at the last minute, and we'll do it. What the heck.

Sometimes there are songs or mixes that just have this magic to them, and that's what I love, that's what I reach for. And I'm probably more of an experimenter. I've never been afraid to break the rules—in fact, I enjoy breaking the rules.

What kind of rules?

[Laughs.] Well, level, for instance. I guess I have to admit I've been responsible for a lot of what I complain about. Because I always went for loud. Not meaning to destroy anything, but...and a lot of the stuff I may have been judged for sounding too crunched is not necessarily my fault, it may have been the mix that I was working with. Because, as I've said, we are at the mercy of what the engineer has done. It's just our job to make it better.

Sometimes you go too far and you have to back off. I don't mind going too far—try it! If somebody has an idea, I'll go for it. I remember cutting a Donna Summer song with Bruce Swedien and we kept blowing circuit breakers. "Well, that's too much—we'd better back it off a half dB." That's when we were doing the club records. We had a lot of fun doing that stuff.

So, why do people come to you to master their records?

I hope those who chose me like me! And I guess they like the end result. Maybe they also enjoy working here—which they should—it's fun working here. And those who haven't been here owe it to themselves to come here—there's a plug! There's a lot of people I haven't worked with yet that I'd like to.

For the last few years, R&B and hip hop have been predominant for me, but, liking all forms of music, I want to do it all. I'm looking forward to compressing the heck out of a classical piece one of these days. Just kidding! But I do like my work; it's always fun to make things better. ■

Maureen Droney is Mix*'s L.A. editor.*

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BY BRYAN REESMAN

Kevin Shirley

Rocking With the High-Tech "Caveman"

PHOTO: MR. BONZAI

Music has taken Kevin "Caveman" Shirley around the world and to the top of the charts. As a leading producer and mixer for more than a decade, he has worked with a succession of popular performers, including Aerosmith, Silverchair, Black Crowes, Little Steven, Dream Theater, Iron Maiden, Journey, Joe Satriani and more. In many ways, rock 'n' roll has been his salvation.

Born in Johannesburg, South Africa, to parents of Irish and English heritage, Shirley escaped the strict regimen of a conservative boarding school in Bloemfontein at age 13 by immersing himself in music. He steered clear of youth military exercises by playing drums in the marching band, then avoided that by playing French horn in the school orchestra, and by the time he was 15, he took command as conductor! "I wasn't content with just being a performer," he says. "So, I guess that's where my musical aspirations began."

After dodging the South African Defence Force by studying composition at the University of Capetown for 18 months, he found work as a sound engineer with the South African Broadcasting Corporation (SABC), doing pop and classical stuff. Then after that, he says, "I went traveling, running around Greece for six months, and then I came back and started working in studios."

Shirley journeyed to Cape Town to work for producer Tully McCully at his Spaced Out Sound Studios, and quickly worked his way from second engineer to producing his own projects during studio downtime. The first one, Robin Auld's *At the Corner*, was the first of four albums he would make with that artist, and that work resulted in Number One radio songs and Top 10 hits in South Africa. Shirley also worked with other local artists, including Juluka, Winston Mankunku and his own band, The Council. He even recorded a version of the South African black anthem, holed up in the studio with musicians fearing for their lives. Eventually, the oppressive apartheid system prompted his migration to Sydney, Australia.

While down under, Shirley connected with the group Baby Animals, whose demos generated interest from America. He went to L.A. with the band in 1990, and when they were signed to a major deal, their new producer, Mike Chapman, retained Shirley as an engineer. Following the multi-Platinum Baby Animals success, the duo went on to work together on albums by Material Issue and Billy Squier, among others. Then, Shirley hooked up with producer Peter Collins as an engineer on Rush's *Counterparts*, two songs on Bon Jovi's *Greatest Hits* and a Divinyls track for the *Melrose Place* soundtrack.

Shirley says he was "tired of being poor," so he returned to Australia and landed the gig producing Silverchair's multi-Platinum debut. It would prove to be a breakthrough, because when he returned to the States to drum up more business, A&R man John Kalodner hired him for projects he was working on at his new home, Columbia Records, including the Journey reunion album. After the successful *Trial By Fire* was released, Shirley's stature grew, and this led to many higher-profile gigs.

Today, though Shirley's name is associated with big-name artists, he also works with many new artists,

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including SoiL, Neurotica, Healing Sixes (with drummer Jason Bonham) and singer Tina Arena. He has also produced and/or engineered soundtrack cuts by Billy Joel, Oasis and Shawn Mullins, among others. We spoke to Shirley at his apartment in New York City last fall.

You've worked on a wide range of albums over the years. Have you developed certain sounds and spatial relationships that you like?

Those are things that you get an opinion about as you go on. If you listen to the Silverchair record I did, I've got the toms panned really hard left and right on that one. It sounded fine in the studio environment when I mixed it, but when I finally heard it on headphones, I was mortified. I thought it sounded so lame. So pretty much since then, most of my records have mono toms in them, except for Dream Theater. I always open them up, but he's got 99 toms, so you get them spread. [Laughs.]

I really try not to impose on the music too much. I try to treat [the drum kit] like a single instrument. Give them their own space, as opposed to rack tom two being its own instrument and having its own space and own reverb. I think that I have unique approaches to some things. I think I have unique approaches to the way vocals sound. I don't know what a lot of other people do, but I always think that my vocals sound more up-front than other people's.

You obviously like analog. George Massenburg, the engineer for the Journey reunion album, said that it was nice to hear a real hi-hat after 15 years.

After George mixed the whole album, the band decided that they liked my mixes better, which is not a choice that I liked because George is one of my all-time heroes. I had a great time with him, and I love his work. But the band thought that I was more in tune with what they were trying to capture, so they went with my mixes—except for the single "When You Love a Woman," which was a Number One song, we mixed together. That was a big honor for me to work with Massenburg.

> When you think something's really important, you have to stick by it. That's what you do as a producer.

What was it like working with Journey on Trial By Fire*? They hadn't worked together in 10 years.***

It actually was a lot of fun. Before we started the record, their manager at the time, Michael Lippman, said we would be very lucky if we ever finished the record. And if I did finish it, it would probably

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take years and years. Before we started, I booked the mastering date four-and-a-half months down the stretch, and we made that mastering date. One of the key things in that was getting the pre-production right.

We initially started off on a two-week pre-production schedule, which I extended to six weeks. It didn't go down very well with everybody, but the thing is they'd done all the demos pretty much in the way that they used to make records. They laid down the drum tracks, then laid the thing down. Some of the songs were built up on loops, and I had them learn the whole record. They could play the whole thing live by the time we went into the studio.

I tell you what, that band is fantastic. I'd be sitting in that room in San Francisco, and Journey would play this album for me every day for six weeks. It was a lot of work, but it was such a treat at the same time. They were magnificent musicians. The cool thing was when we got into the studio, they just played the songs. There was a lot less for me to do at that point than just wait for magic to happen. The song that was the biggest hit on there was all one take, including the guitar solo. You'll hear the guitar starts when the solo kicks in—that's Neal [Schon]. He stops playing rhythm, plays his solo, then goes back to playing rhythm. That's the band playing. We later overdubbed an orchestra on it.

You also worked on the Iron Maiden reunion album, Brave New World. ***Singer Bruce Dickinson said that they had never recorded live in the studio and you encouraged them to do that.***

And, to be honest, [bassist/group founder] Steve Harris was very resistant to that in the beginning. We set up in Paris at Guillaume Tell Studios, which is a great studio. They'd never recorded everybody playing at the same time. They'd always gone in and done the overdubs in the control room. I said, "Just try it, see how it goes." The first day we were starting, Steve said, "I don't think it's going to work. We've never made records like this." I said, "Well, let's give it a go and see what happens." We gave it a go, and he came back and said he was actually having a lot of fun.

> If we can get the best of analog and then keep that in the digital domain, at least I know the sound is not going to change.

Also, rehearsal was important. They had to be out of England for one reason or another, so they were holed up in France and were rehearsing and writing songs together. They weren't all presented with the songs when they came into the studio. They had rehearsed and were ready to go.

What was the chemistry like with Journey and Iron Maiden, considering both classic line-ups had not played together in about a decade? Did you have to play the diplomat?

Always. For both of those bands. One of the amazing things is that you'll often find that the best creative teams generally get out of the studio and diss each other terribly. It happens all the time and always has through history, from John and Paul to Roger Daltry and Pete Townsend,

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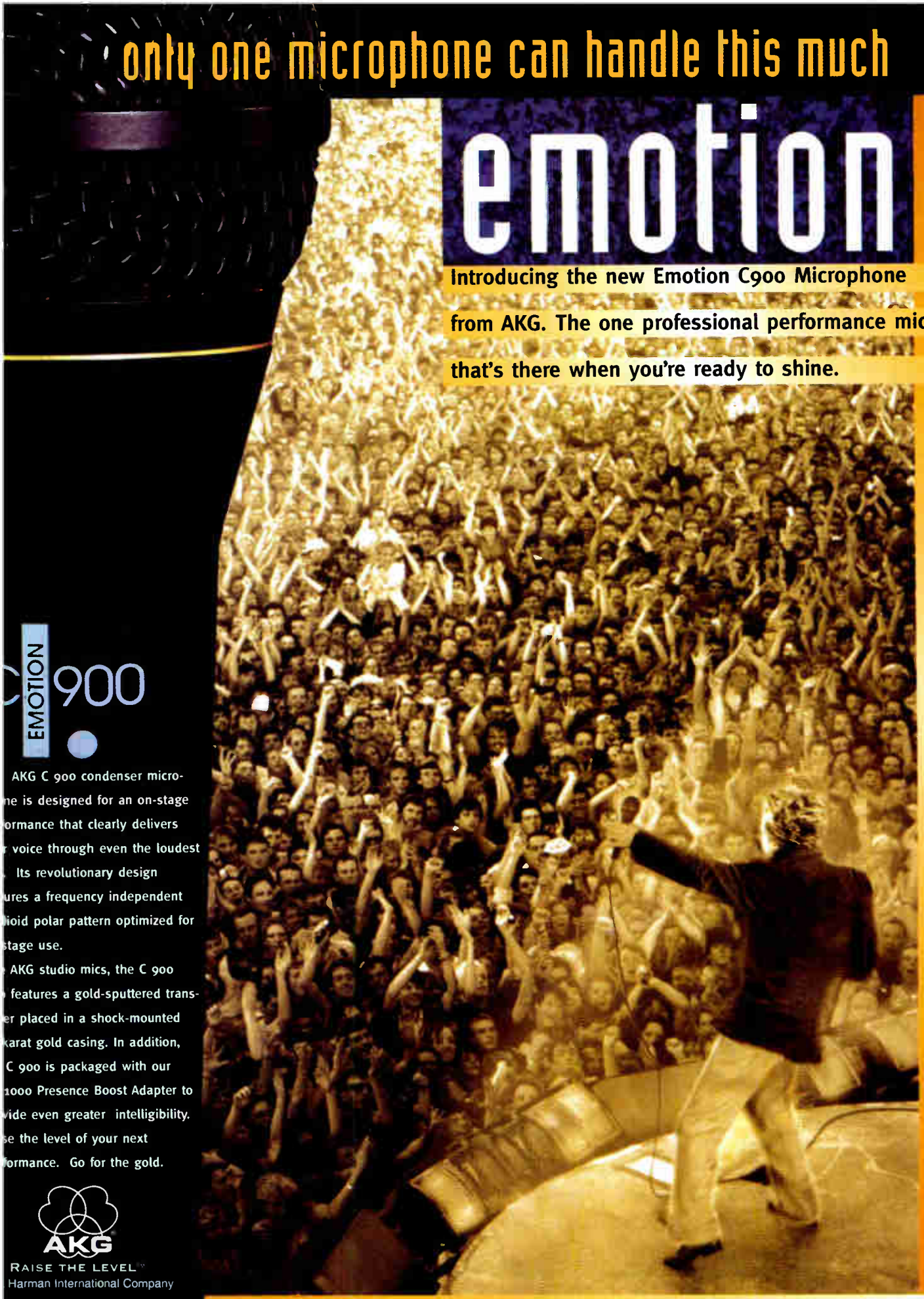

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and Jimmy Page and Robert Plant.

Maiden had their idiosyncrasies. Steve Harris is the boss of the band. To his credit, he likes what he likes, and when he doesn't like something, he just says, "I don't like it." And that's it. I tried to fight some of those battles with Bruce.

Did you ever win any?

Oh, yeah. You have to pick your battles, though. Some of them you just let run their course, and when you think something's really important, you have to stick by it. That's what you do as a producer.

Have you ever had to tell somebody that their song sucked?

All the time.

How do you tell someone?

Exactly like that. I always work with the pretext that there is some merit to what they've written. Unfortunately, it's not always true. The last Black Crowes album is a good example; the one Don Was produced [*Lions*], because they brought me all those same songs, and I didn't think they were very strong. So, they just went to somebody who thought they were strong enough.

You recorded the new Iron Maiden live album from Rock In Rio in Brazil. There has got to be a lot of things that can go wrong when you have a crowd of 300,000 people and you've got wires everywhere.

Rock In Rio was a phenomenal show. We had so many amazing artists, and every night was a different genre of music. The night before the heavy metal night was the pop night with Britney Spears, 'N Sync, all those kind of people. When they were packing up the bands at the end of the night, somebody drove one of the carts across the main snake, with all the power, all the cabling and all the speakers—everything between the front desk and the main stage. They cut through the entire cable and blew two-thirds of the P.A.

The worst time to do that!

That's right, the night before the heavy metal gig. So we were all set to do a soundcheck, and they didn't even have a link between the front of house and the stage, which they finally repaired in time, but they didn't have parts. I don't know if anybody knew—I certainly don't think Maiden knew—but they were playing on a third of the P.A. rig.

Did you have people re-do parts on that album?

No, we didn't re-do any parts. And, actually, there's nothing re-done, and sometimes that's not always the best thing. There are times when Bruce is right in front of the monitors, and you can't hear him for the noise that's coming through. He's got a wireless microphone. At those points, in both the DVD and CD mix, I just let him blend into the thing. It's part of what happens live. But the crowd was phenomenal.

One of the coolest things about playing there is that a South American crowd knows every single lyric of every single song. As soon as a couple of the first notes start, everyone sings. What used to be a problem with [playing to] 300,000 people, where you have all these delay towers all the way down the field, was that you'd have this long delay thing. So I just went into Pro Tools and found a snare crack on all the delay towers and shifted all the delay towers in time. All of a sudden, you have 300,000 people singing in time with the track, and it's phenomenal. For the 5.1, it's outrageous. The band barely features; the audience is just spine-tingling.

As far as technology, are you a Pro Tools man? Did you start off working in analog and shift to digital? Or do you use a mixture of the two?

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I'm still in love with analog, and I still cut everything with analog. This band we're cutting tomorrow—Cyde from Akron, Ohio—we're cutting the whole thing on 15 ips, no-noise reduction, on 2-inch tape. Once I've got all the tracks, once I've got the beds, then I'll put it into Pro Tools. We put the vocals straight into Pro Tools; I can pump up the vocals there and get the overdubs in there. You can't make a record without Pro Tools now.

Do you prefer the quality of tracks on Pro Tools vs. 2-inch tape in terms of mixing?

I actually prefer mixing on Pro Tools, because there's no degeneration of the tape. Although, I do love that initial tape compression and saturation [on analog]. Twenty-four-bit technology is definitely improving things a lot, and digital technology is getting better and better. It's like listening to vinyl. It's great on the virgin listen, but once the crackles and pops come in, it becomes a pain in the ass. If we can get the best of analog and then keep that in the digital domain, at least I know the sound is not going to change. I can go back on one part a hundred times if I have to, and I'm not going to have to gradually lift the high end because it's being worn off the tape.

Do you have any favorite pieces of gear that you've grown fond of?

My favorite console is still the Neve 8068. I also love the SSL 9000 console. That's just a fantastic tool. For a mixing console, the SSL 9000 is really unbeatable. It's so versatile and so viable and sounds really good. My all-time favorite piece of gear has got to be the old UREI 1176 compressor.

As far as newer equipment that's come in, I love this Roland VG-8 guitar synthesizer. That's fantastic. I've used that for a while, and I've always introduced it to guys in the other bands, and they always say, "You'll never see us touch them." When we did the Aerosmith album, I showed Joe Perry my VG-8, which I put a little pick-up on one of my Strats. He was like, "Nah, I'll never use that. If I use a 12-string, I'll use a 12-string." But if you see him live now, he's got a VG-8 hooked up. I love that. And Neal Schon uses it. And this new band with Jason Bonham, Healing Sixes, uses it.

You're selling the Healing Sixes CD on your Website. Are you trying to help them out?

Actually, no, I have a production deal with them. I paid for it. I spent $180,000 making the record with them. We just got a release with SPV in Europe for them, so that's great. The record is great. Jason's a great drummer.

You've worked with a lot of veteran bands with roots from the '70s and '80s. Is there a challenge in attempting to preserve their sound while modernizing it somewhat and making it accessible to a new audience?

With Aerosmith, I definitely tried to bridge the gap between the gloss pop of *Get a Grip* with [earlier albums like] *Rocks* and *Toys*. I tried to find a meeting ground for the two. [*Nine Lives*] came out pretty good. I was very happy with that record. It was a very tough record to make.

In what way?

It was very tough because they'd already made the record once and spent a lot of money with Glen Ballard in South Beach. To be honest, Steven [Tyler] had been very fond of the Alanis Morissette record, which Glen had produced, and Steven wanted to do a record pretty much in the same vein. A lot of the production that came out was not what anybody expected Aerosmith to be. I'm

not saying that in a negative or a positive way, but suddenly Columbia just re-signed them back from Geffen, and they had a sizable advance.

I can tell you that, from Tommy Mottola to Kalodner, nobody was happy with the record. And Joe Perry wasn't happy with the record, and Brad [Whitford, rhythm guitarist] wasn't happy with the record, and [drummer] Joey Kramer wasn't playing on the record because his dad had died, and he had gone into his "blue funk period," as he called it. So Steve Ferrone was playing on it, and he's a great drummer, but it's not Aerosmith; it really isn't. I hate to say that. Joey has such a particular way that he drives the band. His hi-hat leads his snare drum, and it's just the way he plays that you hear on every great Aerosmith track.

So did you re-record the same songs?

Yes.

Did you help re-arrange them?

Yes. When I first had my meeting with Steven and the guys, we initially talked about adding new guitars to the production that they had already done and really getting more of that "Joe Perry Rocks" side into the record. At the end of the day, everything was re-cut. It didn't need to have been. I know there were some songs that Steven wanted to have carried over from the Glen Ballard sessions. Whether he likes to admit it or not, he had the choice to have them on.

I can tell you that the first masterings had different versions of the songs on, and he changed it all back to the versions that I produced by the time it came out. He definitely didn't have to go with all of those versions, and quite honestly I think that it's a good thing that they did, because those are all the Aerosmith versions. Whether or not the public was looking for a change, and would have accepted a change, in the Aerosmith sound is neither here nor there. My job was to make an Aerosmith album in a way that everybody from the people in the band to the management to the label thought that Aerosmith should sound.

So Joey came back and played?

Yeah. Then we cut them all the same way that I like to make a record, with everybody in the same room. That's how I like to get the beds down, with everybody in so I can get some of the energy. And I can tell you it was some of the most exciting times. To be in the control room and have those guys jamming for 40 minutes—nothing in particular, just going out and playing together like I don't think they had done for 20 years, with Steven making noises and playing harp and Joe soloing—was great! Brad is one of the most underrated guitar players in the world. For me, that was just phenomenal. That's some of the power of the band right there, and so much of that just gets lost all of the time.

What's the best album you've worked on?

That's still to be made. My favorite album that I've worked on—well, there's nothing like listening to Jimmy Page play. He's my all-time favorite. That live album [with the Black Crowes] was just phenomenal. Jimmy is a wonderful, wonderful guy. I do not have enough nice words for Jimmy Page.

What would be the worst project you've ever done?

Oh, I've done so many of those. Not lately, though, because I'm also pig-headed about my hours now. I try and make myself excited every day to go to the studio. And I can be when I've had a good night's sleep; I can't be in the studio till midnight. So I like to work from noon till 9 o'clock, go and have some dinner, have a couple of drinks to chill out, come home, just watch the 11 o'clock news or something, and go to sleep. Maybe I'm getting old, but that's what floats my boat right now.

It's been so important. We start at noon every day, and that doesn't mean we're going to start with bagels and coffee. We'll start playing at noon. We'll have a downbeat at noon, then we'll work for nine hours. We're not going to eat during the day. We'll stop and have a snack. We won't screw around for 15 or 16 hours every day, because the next day you wake up and you feel tired. That's awful to work like that, and it's not very constructive.

If there's one thing you've learned over the years, something valuable that you can pass on to people, what would it be?

You cannot forsake your home life. You have to try and be there for the people around you. Don't make the studio the focus of everything, because you just end up shooting yourself in the foot. And you lose sight of the broader picture. Sometimes you're much better when you've just been able to get away from it and think and let things fall into place and get some perspective. ■

Bryan Reesman is a freelance writer in the New York metro area.

"Amadeus": The Director's Cut

New Scenes, Improved Sound Coming to a Theater and DVD Near You

By Blair Jackson

If you haven't seen Milos Forman's *Amadeus* for a number of years, it's easy to forget what a great film it is. In a hazy memory, you probably recall the wigs, the sumptuous sets and colorful costumes, young Mozart's cloying hyena laugh and, of course, all that incredible music. But remember, too, that it was originally a great stage play by Peter Shaffer, a brilliant meditation on creativity, faith, and musical and spiritual transcendence. Shaffer's play, and Forman's 1984 film (which he co-wrote with Shaffer), is no conventional biography of Mozart; indeed, the main character is a jealous, older composer named Salieri, who wages a fierce personal war against God because he cannot accept that the Almighty has given such sublime talent to the boorish, hedonistic Mozart, while he—the refined and pious Salieri—struggles to write competent but conventional music. Forman's film is epic in its scope, yet unsparingly intimate; and it's the human drama that gives the work its deep resonance.

Amadeus was a surprise hit and was rewarded with 11 Academy Award nominations and a whopping eight trophies on Oscar night, including Best Sound. Now, *Amadeus* is back in an expanded version, with 22 minutes of added scenes, a bit of new music, remastered sound and, of course, a newly minted DVD in 5.1 surround. The film was re-released in theaters in late February; the DVD is scheduled for a May release.

The project reunited many of the talented people who crafted the original, including Forman, Shaffer, producer Saul Zaentz, supervising sound editor John Nutt, supervising re-recording mixer Mark Berger, re-recording mixer Todd Boekelheide and assistant sound editor Tom Christopher, who in the intervening years has developed into a picture editor.

"Essentially, what happened is that Saul and Milos, the producer and director, got together and looked at an old cut of the movie that was three-and-a-half hours long," says Christopher. "They looked at that and decided there were some things they wanted to investigate and try to add back. And that's where I came in. I came over to the [Saul Zaentz] Film Center [in Berkeley] on another matter and got into a conversation with Saul, who told me immediately to call Milos and talk to him, which I did. He outlined to me that there were three to five scenes that he wanted to add back in. I called him a few days later, and it turned into more like 15 scenes—really 13 or 14 story points, where the whole concept of the story, the arc of the story, had been taken out.

"The best example is the story arc that involves Costanza [Mozart's wife] and Salieri," he continues. "During Mozart's decline, Costanza tried to intercede for her husband and involve herself in the dispute between Salieri and Mozart. That story was taken out completely, and there were lots of tendrils from that that worked into the movie. For me, certain things started to look better, to gel. I had always wondered, 'Why is she so angry here?' She's angry for a reason: Salieri actually humiliates her in a very powerful scene."

Christopher notes that there were also several short scenes of Salieri speaking to the priest (which forms a framework for the entire film, which is mostly flashbacks) that were added back in "to clarify Salieri's position that it's God he's competing with: 'I've decided I will thwart God, that God will lose.'" There is also another new storyline involving Mozart's frustrating attempts to make ends meet by giving private music lessons.

At the Saul Zaentz Film Center, this photo is titled: "Return to Saulzberg." From left, Todd Boekelheide, Mark Berger and John Nutt.

Director's Cut *picture editor Tom Christopher at the Avid.*

REVISITING 1984

Not surprisingly, constructing the new scenes was a fairly complicated process, both visually and sonically, because it involved finding and working with nearly 20-year-old elements and blending them seamlessly into the film. On the visual side, Christopher had to cull the new material from 760 boxes of raw film footage. That involved first putting the boxes in order, then extracting what he needed and assembling a temp of the new scenes "the old fashioned way, on an eight-plate Kem Universal that has two picture heads so it gives you the ability to do this type of editing—you can have one thing moving and another thing you're cutting into. It's the style of cutting that the film was originally done on," he says.

In all, Christopher reprinted some 75,000 feet of film—equivalent to about 13 hours—representing multiple angles of raw footage, for the 22 minutes that was ultimately added to the picture. "I also deleted a few minutes from the picture," Christopher says, "because in order to make this story work, some things didn't need to be in there—the beginnings and ends of a few scenes needed to be manipulated a bit. Some of the changes are very tiny, but they seem to have an effect." His goal, he says, was to try to re-create the rhythm of original picture editors Michael Chandler and Nena Danevic. "I don't want the new scenes to come in in some sort of aggressive way," he comments, "so we used sound overlaps, which are used in *Amadeus* quite frequently. I definitely wanted people to look at this and say, 'I can't tell what's new.'"

After Christopher had completed a rough cut on the Kem, a process that took several weeks, he sent versions on videotape to Forman and Zaentz, while the original and new elements were digitized and loaded into the Avid.

—CONTINUED ON PAGE 114

THE MUSIC EDIT

By Sarah Jones

Mozart's music is central to the drama of *Amadeus*—manifesting itself as a key character, both onscreen and offscreen—and it was treated as such by the Saul Zaentz team. To edit the music for the *Director's Cut*, the production team turned to veteran Robert Randles, an accomplished music editor with credits ranging from *Conan the Barbarian* to *Seven*, *The Talented Mr. Ripley* and *The English Patient* (for which he won a Golden Reel award).

Walk us through the timeline of this project. How and when did you get involved?

I was approached early on in the *Director's Cut*—about a year-and-a-half ago. While the picture was being re-edited, [picture editor] Tom Christopher would informally bring me in once in a while to help him work through some music issues. When I first laid my hands on the materials, I felt like I had been given my own keys to a museum. I was in awe, delving through [conductor and music director] Neville Marriner's own scores and reading his notes. All the tracks were amazingly well-preserved, with John Strauss' [who composed original music for the film] and [original music editor] Mark Adler's notes on the leader, the mag and in the cue sheets, leaving little doubt as to what was to be used where and how.

How would you describe your role as music editor on this re-release?

One extreme rarity about *Amadeus* is the extent to which the music was meticulously planned and recorded for each scene before the film was shot. The obvious intention had

—CONTINUED ON PAGE 122

The Art of Data Management and Archiving

Part 1

ILLUSTRATION: LIZABETH HEAVERN

By Larry Blake

The old adage "work expands to fill the time allotted" could easily be paraphrased within the world of digital audio workstations: "Hard drive requirements increase in inverse proportion to the cost per Gigabyte."

I seem to remember that a half-dozen 2-Gig hard drives were enough to get us through the first movies I edited on workstations (*Kafka* and *King of the Hill*, in 1991 and 1993, respectively, using the Solid State Logic ScreenSound system). I believe that we would wipe a drive as soon as material for a given reel (say, reel 1ab dialog) was laid back to 2-inch tape for the mix; we didn't even entertain the luxury of having everything always available to us.

But somehow we finished the movie, and I don't remember thinking, "This film would sound better if we only had a few dozen more Gigabytes of storage." Anyone who lets words like that leave their mouth can always be nailed with a corollary of the most time-proven of adages: It's the bad craftsman who blames the size of his tools.

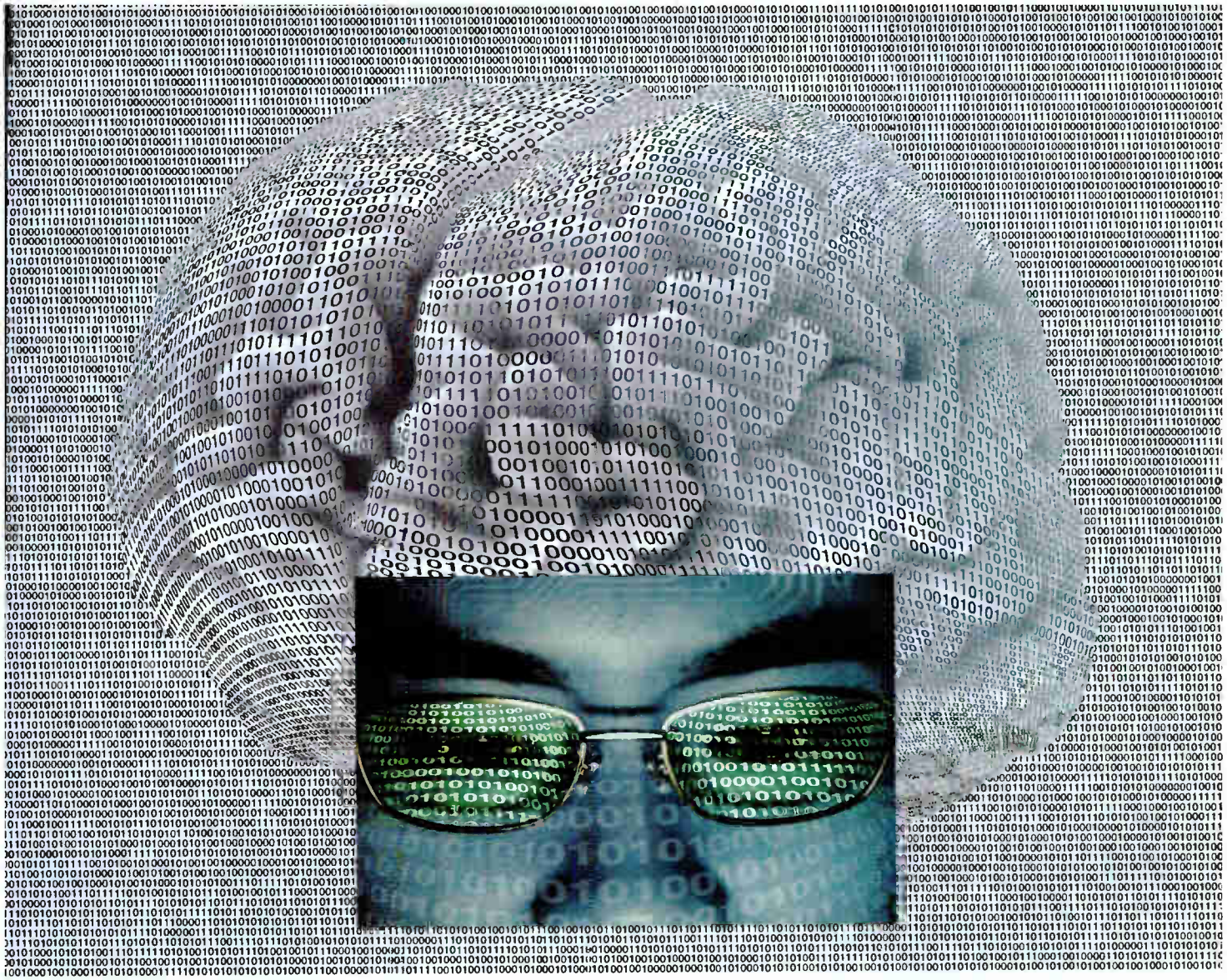
The amount of hard disk storage that one owns is indeed a non-issue these days; the real battles concern how the data is named, organized and backed up. My columns in the next three months will explore this most geeky and propeller-heady of topics. The sad truth, of course, is that many creative battles can be won and lost because of bad organization. At the very least, good energy is often wasted, which means time lost, which means less time to be creative. In summary, less hair on your head.

FROM TAPE TO DRIVE

When I started using Pro Tools for sound editing back in 1995, I devoted little thought to hard drive management and attendant tape backups. We needed material, it was transferred to drives, we backed the drives up to Exabyte tapes. Audio files were spread to hell and breakfast, but somehow everything worked. Because material was premixed and final-mixed to linear media, the need to get back to these files and sessions seemed slight.

The first change occurred for me in early 1998, for *Out of Sight*, when I started recording mixes on hard drives as 24-bit Sound Designer II files. So, whereas in the past I would vault rolls of 2-inch SR-encoded analog, ½-inch 24/48-track DASH and 35mm mag film, now I was shifting to a new paradigm. The hard drives themselves were, of course, too expensive to keep. (The economics of vaulting drives have changed a bit in the past four years, as I'll touch on next month.) We had backed up edit sessions and data during post-production, as always, but archiving dozens of reel-length files containing stems and print-masters was uncommon. Most of my colleagues were content to back up their drives only by cloning them to DTRS tapes (which I also did), although this posed two somewhat serious problems.

One, the DTRS format is not seriously regarded as a stable medium on which to store masters, a big factor being machine-to-machine compatibility. If you have anything that is precious and irreplaceable, and that is only stored on DTRS tape, then you would be well-advised to start cloning to file on data backups, *not* to other DTRS tapes! (Exactly to "what" will be dealt with in these columns.)



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The second reason to not rely on DTRS, at least not back in early 1998, was that it was a 16-bit medium only, and I have been using 24-bit hard disk recording exclusively. While, of course, DTRS has since expanded to the 24-bit world, not every facility has upgraded its decks, and it's not the best digital hygiene to chop off those additional eight bits. Okay, enough DTRS bashing.

So, the solution lay in doing data backups to a proven medium, in our case DLT tape. Before this procedure could begin, we had to confront the naming issue: Where a simple, single track sheet or label was good enough in the past, if we had simply backed up the drives without renaming their files, we would have had dozens of Sound Designer II files with uselessly similar names beginning with MMRTrk01....(This is the film sound equivalent of what I'm sure goes on in the music world, with dozens of files named "Kick-01" lurking around sessions.)

ALL IN A NAME

The obvious solution to these data-management problems is a consistent file-naming scheme. All files in my system begin with a contraction of the film title, followed by an underscore. For example, everything for *Ocean's Eleven* begins with "OE_"

Note that when I say "everything," I mean *everything*, from the temp dub stems to premixes to final stems and printmasters to Avid worktracks to Foley and ADR recordings, to Pro Tools session documents to Microsoft Word letters to Excel budgets...Everything.

Although starting every file associated with a film in the same manner makes for easy searching, the task doesn't end there for us anal types. Consistency should ideally carry through to the construction of whole file names and the folders that contain them. In this manner, our session file syntax goes from least specific (film title) to most specific (date of editing), with stops in the middle for reel or part number, what food group (DX, FX, etc.) and what picture version number. So, a session name would read: OE_Pt.1DXv5_10/20a.

It is a time-honored policy in films to use dates to define picture versions, but I think that practice has outlived its usefulness, and I believe that using version numbers is the way to go. It's so much more mnemonic and easy to hold in your brain; it doesn't matter *when* reel 1AB is turned over for the next preview, it's going to be Version 3. And if (some would say "when") that changes before we actually mix the reel, it becomes Version 3.1. One can then append letters to numbers to indicate when new opticals are inserted or when new music is cut in, or when a length-for-length change is made, etc., etc. In all these cases, your brain can still look at a file or a session and say, "Version three, first film conformed preview," without needing to remember the date of said preview.

Then, after the preview, but before the lock for the next one, the picture department would go up to 3.2, etc., jumping to Version 4 only when the film is turned over to the sound department. The literal date saying *when* a reel is locked is irrelevant, and it's confusing to think of different dates for different reels when, in fact, they point to the same version.

I do think it's important to have dates on session names, with letters appended to it via the "Save As" function during the day. The act of doing a "save as" is something that I know is uncommon for many of you, and you are hereby served notice to get with the plan right now. It gives me shudders whenever I see that someone who has only one session document for

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a given project (*Citizen Kane*_Reel 1 Dialog). Saving over the same file day in and out is dangerous because if it becomes corrupted, everything is lost. You should leave your most current files on the same folder level as your fade files, with older sessions in an "Old Sessions" folder.

While it is true that the "auto save" feature can get you out of many of these problems, you're still not out of the woods if the hard drive that contains the main session data goes down without having been backed up. Safeguarding against this eventuality is as simple as frequently copying sessions over to a folder on the desktop that resides in the internal drive of the computer. I try to do this whenever I do a "save as."

BACKUP

Naming isn't the only concern here; you also have to decide how to organize backups. In the beginning, my assistants and I would have separate backup tape sets for dialog, ADR, group walla, sound effects and Foley. (Sometimes these were further broken up by reel.) Recently, I've evolved much broader, and I think more sensible, lines of demarcation between backup food groups.

First up is the "Units" group, which includes everything that gets cut for the final mix. This includes OMF files (production dialog, temp music and effects) from the nonlinear editor, original Foley and ADR recordings, sound effects files (both original and library), and associated worktracks. Basically, this is a grab-bag of everything that will show up at the final mix, and recently I have been only making one set of "units" tapes during the post-production period proper—I trust my DLT backups.

This is not to say that those tapes comprise the only other copy of most of that material. Because of the cheap price in hard drives these days, once material is cut, it never leaves its respective hard drive until after the movie is finished and in theaters.

Furthermore, the audio files and their associated edit data are, almost by definition, on at least one other place. I organize original sound effects recordings that I shoot for a film by subject, and once those are edited and library masters bounced, I make two sets of tapes for my effects library. Older library recordings have files on the server, which is, of course, also protected by multiple backups. And the OMF-sourced production dialog and temp music and effects from the Avid exist back in the picture editorial department, both on their hard drives and *their* backups.

In this scheme, then, the only "unique" files to the sound editorial department are original Foley and ADR recordings, plus bounces made by any sound editor. To give this material another backup level (in addition to the Units tapes), starting on *Ocean's* I began giving my assistant sound editor a 36-gig (undoubtedly larger in the future) drive as an all-purpose place to salt items away. Not only did it contain ADR and Foley sessions and audio files, but also such miscellaneous crap as the current work picture and track, and temp dub stems.

Then, at the end of post-production, I'll make a second "Unit" backup set that contains everything exactly as it was during the final mix. In addition, of course, I put so much emphasis in salting away the cut units because I have become (as frequent readers to this column can attest) increasingly reliant on my Pro Tools sessions, and now mix directly from them. Because I have no recorded premixes to fall back on, these sessions are one-stop shopping for

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everything that happened during the mix before the final mix stems were recorded.

The next two months I'll focus more on the archiving aspects of this data that has accumulated. I can be reached at PO Box 24609, New Orleans, LA 70184, or via the Internet: swelltone@aol.com. ■

Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although one of them would have to be that they assign great names to their streets, even if they frequently mispronounce them.

"AMADEUS"

FROM PAGE 107

There were discussions back and forth, and Christopher did an Avid cut based on the Kem conform. He then looked at the additional footage, made another cut and then flew to New York. "Milos and I fine-cut that on the Avid," he recalls. "Then Peter Shaffer and Saul and Milos and I screened the film in my cutting room [at PostWorks] in New York, and we actually made a few changes that final day."

On the sound side of the equation, a top-flight team worked on the various elements at the Saul Zaentz Film Center. Mark Berger was back mixing dialog and effects, Robert Randles did the music editing (see sidebar; Mark Adler was the original music editor), and Todd Boekelheide did the music mixes. Like Christopher, who found that "I was able to uncover everything we needed in the same quality level as the original film," Berger discovered that the tracks he and the original team had created nearly two decades earlier were in very good shape for the most part.

"We mostly worked from the 70mm sounding master, from the stems," says Berger, who had also revisited the film's audio tracks a number of years ago for a Laserdisc version. "There was a dialog stem and there were music units that were transferred into Bob Randles' computer, and there was an effects stem: two 6-track [mag] stems that had the dialog, music and effects on them. But that's as far back as we went. The music was from the stereo mixdown from 24-track. I think for a couple of cues where there was some wow and flutter, they did go back to the 24-track.

"But as it turned out—and this is the key to the whole experience—going back further isn't necessarily always better," he adds. "In other words, just because we were able to redo everything, and everything was digital, and there have been advances in technology, doesn't necessarily mean it was better, and, in fact, the most interesting thing we found was that we did it right the first time. In some cases, it was virtually impossible to re-create the feeling and the emotional impact of the music and the scene, even though we were working from original elements, and it had been digitized, and the pitch was corrected, and all the wow and flutter had been taken out. All that became irrelevant when you sat there and listened to the *effect* of what had been done. I would say 85 percent of the time we stuck with the original. It may have been just because we were working in mag film, and we were mixing to exploit the strengths and weaknesses of that particular medium. When you change media and go to digital—we did the new work on a Sonic [Solutions system]—you're not necessarily able to produce those same kinds of effects."

The Sonic system did come in handy when it came to cleaning up the original dialog tracks, which had been recorded in mono on a Nagra "and was about 20 dB too low on the tape and was quite hissy and noisy," Berger says. "At the time [in 1983], I had to invent a device, which

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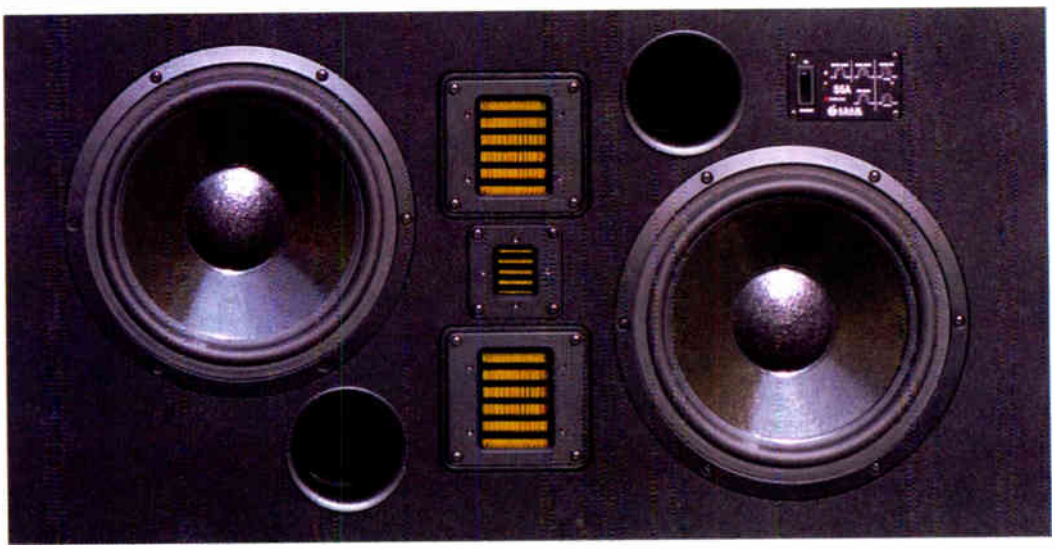

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I called the Markomatic, which was a Dolby CAT 43 box—their 4-band A-type noise reduction, which had variable compression on each one of the bands. We basically used that as a four-way band splitter, because it was all phase-coherent, and the bands had been carefully thought out, and the overlaps and everything summed quite well. So, I brought each one of those four bands out to a little box that had switches and patch points, and then I put compressors and gates and signal processing on each one of those four bands, so each line of dialog could be treated—rather than as a whole chunk, it would be broken up so the high frequencies could be treated differently than middle and the lower frequencies, which is sort of a crude version of band splitting and limiting and de-essing. Four or five years ago, someone came out with a box that does all that and more, but at the time that was all we had.

"So, given that, it was better to go back to the dialog premix I had done and run it through the Sonic No-Noise, which is a much more finely tuned box, and it really quieted it down. I liken it to scraping off some of the aged patina on a statue so you can get to the luster underneath; now the dialog really shines, and you can hear a lot of subtlety that was covered up before, especially on the Salieri narration. And there's just a general overall feeling of intimacy and immediacy that wasn't there before."

The envious Salieri

As for the new footage added in by Christopher, "we had original production tracks that had to be No-Noised and premixed. Basically, we were starting from scratch, but with 20 years of advances in technology to make it match. I think it did very well. It didn't need the Markomatic," he says with a laugh.

REVERB IS YOUR FRIEND

Particularly challenging were new scenes in the palace of a would-be student of Mozart's named Schlumberg. Aside from needing extensive new dog Foley (recorded at the Film Center), "those scenes were very, very echo-y," Berger relates. "It was a huge palace room that they filmed in; it almost sounds like a stadium. So the challenge there was to try to clamp down on the echo so it became a reasonable-sized room. So, we compromised between the room reflecting the guy's affluence, in that he could afford to live in this palace, but also maintain some kind of intelligibility.

"Now, getting rid of reverb is difficult but not impossible. Through a combination of the Dolby 430, which is the SR version of the 43, you can use it to kind of clamp down on the tails of words, which has the effect of reducing the echo. And then you have to supplement a little

—CONTINUED ON PAGE 120

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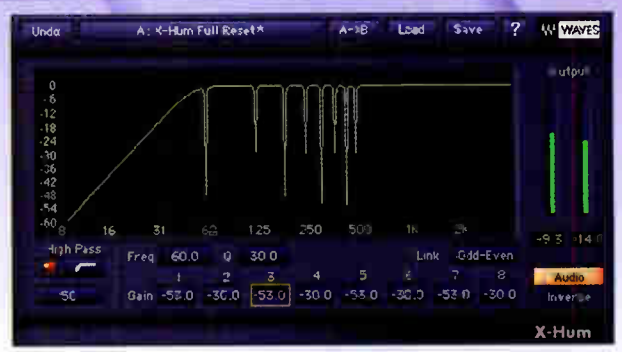

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WAVES

The Bake-Off

Vying for the Sound Editing Oscar

Every year, in the first week of February, the members of the Sound Branch of the Academy of Motion Picture Arts & Sciences gather at the Academy Theater in Beverly Hills for the Bake-Off. After cocktails and dinner at nearby Kate Mantilini, as many as 150 of the top sound editors, designers and mixers walk a short block to the world's premier theater, settle into the center section (non-voting guests take the sides) and cast their votes for the year's best in motion picture sound editing.

The process actually begins at the end of December, when members of the Sound Branch are polled on the year's best in sound editing. (The award was changed this year from Achievement in Sound Effects Editing to Achievement in Sound Editing.) The votes are tallied in early January, and seven films are selected for the Bake-Off.

At the Academy Theater, each supervising sound editor is allotted time for a 10-minute reel. It can be edited from the finished film in whatever manner best shows off the intent of the sound editing—though the audio cannot be retouched.

The order in which the films are played back is chosen by lottery. At the end of the evening, voting members give each film a score and cast their ballots. Figures are totaled, and up to three films are then nominated for the Best Sound Editing Oscar. (If only one film receives high enough marks, then it is recommended for a Special Oscar.)

Here, then, are the seven films that were shown at the Bake-Off a few weeks ago. As *Mix* went to press, the Academy announced the nominees. Two films from the Bake-Off received the required 8.5 score. They are *Monsters, Inc.* and *Pearl Harbor*. Congratulations to all the supervisors and their crews.

AMELIE
Miramax Zoe
Gérard Hardy (sound editor)

A.I. ARTIFICIAL INTELLIGENCE
Dreamworks
Richard Hymns (supervising sound editor), Gary Rydstrom (sound designer and supervising sound editor)

BLACK HAWK DOWN
Sony Pictures
Per Hallberg, Karen M. Baker (supervising sound editors)

THE FAST AND THE FURIOUS
Universal Pictures
Bruce Stambler, Jay Nierenberg (sound design and supervision)

LORD OF THE RINGS: THE FELLOWSHIP OF THE RING
New Line Cinema
Mike Hopkins, Ethan Van der Ryn (supervising sound editors)

MONSTERS, INC.
Buena Vista
Gary Rydstrom (sound design and supervision), Michael Silvers (supervising sound editor)

PEARL HARBOR
Buena Vista
George Watters II (supervising sound editor), Chris Boyes (sound design and supervision)

Amelie

A.I. Artificial Intelligence

The Fast and the Furious

Pearl Harbor

Black Hawk Down

StorCase InfoStation
Behind the Scenes

Glacier Bay
Alaska

Diving into High-Definition

It's not just a job, it's a truly unconventional adventure when John Brooks, an award-winning producer/director/cinematographer, is in charge of the project. He is currently in the final stages of finishing a one half hour "high-definition" video documentary about the underwater work of Alaska's Glacier Bay.

"The Park Service had this project in the que for a couple of years. The delay was actually a blessing in disguise because it allowed me to take advantage of today's high-definition quality", said Brooks. "This piece will enhance the visitor's experience by giving them a spectacular close-up view of the bay's underworld", added Brooks.

Brooks wanted a solution that would allow him to match or exceed the benchmark resolution of underwater filming. After a great deal of research and underwater equipment testing, Brooks found HD to be very flexible in its ability to deliver superior resolution in the bay's harsh underwater conditions. One of Brooks' biggest concerns was the camera. "The camera had to be able to withstand extreme underwater conditions over long periods of time without incident", said Brooks. This concern was lessened when he discovered a Panasonic HD camera with a special Pace Technologies housing specifically built for underwater filming.

On the post-production side, Brooks needed a reliable and flexible solution. He used a Power Mac G5 with an Atto Ultra160 SCSI card, Apple Cinema Display, Final Cut Pro, the **RAID-ready StorCase InfoStation enclosure solution** filled with Maxtor Atlas drives, CineWave HD and Panasonic's compact deck.

Brooks shot and viewed tapes with his onboard monitor immediately in HD after each 32 minute dive. The tapes were later transferred to D5 masters for archiving and converted to DVCPro format for editing using CineWave's video capturing feature. This allowed Brooks to fit 13 hours of quality compressed video on the StorCase InfoStation storage solution. Edited drafts were created in DVCPro by utilizing Final Cut Pro. After the editing process was complete, the drives were flushed clean and a final edited version was recaptured in full HD resolution. After some fine-tuning, the makings are output back onto D5. A D5 Master with soundtrack and animations will be created at a post-production facility and a final HD copy will be transferred onto storage where all future products will be derived.

John Brooks, a veteran documentary filmmaker, wanted a solution that would allow him to match or exceed the benchmark resolution of underwater filming.

Armed with all his brilliant talent and cutting-edge capture and post-production equipment, Brooks is already thinking about and planning his next out-of-the-ordinary journey somewhere along the continental shelf in the South Atlantic.

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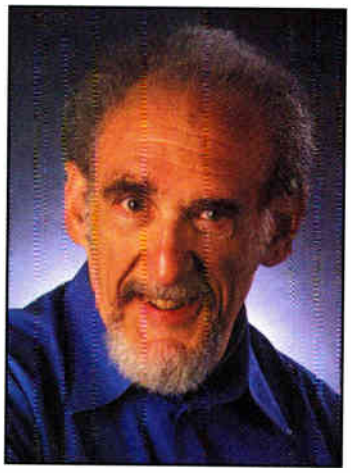
—FROM PAGE 116, "AMADEUS"

bit with a shorter echo to make up for the fact that you hear it going away. So, basically, you whack off the long tails and replace it with shorter tails."

Berger found that for the 5.1 surround version of the film, too, he sometimes added different "rooms" to fill out the sound for the rear speakers. "When we were working from the original mix off of the 70mm, we would just re-create the surround using notes of the Lexicon [224XL] settings that we used to make the surrounds. But we also added room to all the scenes. I developed spaces for Salieri's room in his cell, for the emperor in his large room, for the meeting rooms—I had half a dozen different spaces that corresponded to the different rooms, and I would add room to the dialog and spread it out—not hard left and hard right, but maybe 30 degrees left and 30 degrees right. What that does is, in addition to warming it up a bit and giving a sense of being in a space, it kind of smooths out all the little artifacts that were left over from the use of the Markomatic years ago."

This time around, Berger's reverb of choice was Lexicon 480. "I wanted to make the spirit of the voice live in the room just a little bit longer and feel a little fuller," he says, "so that once the words leave the character's mouth they don't just die on the floor in front of them; instead, they inhabit the room for a bit and then dissipate."



Mark Berger

In this film, even more than most, the relationship between the dialog and the music and the overall story is critical, Berger notes. "The music becomes another character—there's Mozart and Salieri and the music. It's so perfectly and intimately integrated with the story and the transitions and the underlining, it's one of the few movies that is able to coalesce all the functions of music—as source, as score, as underscore, as background—and it adds the idea of it as a voice in itself."

Berger believes that the film has not lost any of its power to excite and enthrall; indeed, he notes that when it was shown not too long ago at the opening of a new theater in Houston (along with *The Right Stuff*, which Berger also worked on), "even though everyone had seen it before, they were completely blown away by it. And now it's even better. I think it's great that people will have a chance to see it on the large screen again in a way that existed only for a relatively brief period of time in the 70mm version. I think even young people who are used to all these action films and a lot of noise can appreciate what this film is and the value of sound apart from just being louder explosions." ■

Blair Jackson is Mix*'s senior editor. In an eerie parallel with Mozart, he has on occasion been accused of using "too many words."*

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"AMADEUS," THE MUSIC EDIT

—FROM PAGE 107

been that the picture would conform to the music, and the music would be left in pristine condition. However, contrary to myth, there are hundreds of music edits in the score. Then there are the normal technical edits, and it adds up to a dozen or so mag film machines playing back all the overlapping edits.

My goal, therefore, was to make the already sliced-and-diced score conform to a newly sliced-and-diced picture without anybody noticing. My advantage is that I'm working with digits on a computer, and I am afforded the luxury, for example, of being able to fashion elaborate track-independent crossfades in the privacy of my own cutting room. That allows me to come up with multiple solutions and let the group decide which one they like the best.

Would you say, then, that your main goal was to maintain seamlessness and consistency?

Well, there were really four main things I was focusing on. My first step was to reconstitute all of the original edits so that they would play back with seamlessness and consistency, as you say, and not force the mixer to turn handsprings. The next step was to make all the music work along with the new version of the picture. There was then the task of making previously recorded, but unused, music work with new scenes. And finally, there was the question of new music.

I understand there's a new scene involving a piece for glass harmonica...

The scene immediately follows Costanza's devastating humiliation by Salieri, which is now a really powerful part of the story. She's crying in bed, and Wolfgang tries to comfort her, not knowing why she's upset.

Based on Tom [Christopher's] description of the scene, I suggested a relatively obscure piece Mozart had written for an instrument invented by Benjamin Franklin, the "Adagio for Glass Harmonica." Benjamin Franklin attended a concert in London where he heard somebody play a set of wine glasses tuned by partially filling them with water. Being Benjamin Franklin, he came up with a better solution—a sort of rotisserie of nested, tuned glasses laid out like a keyboard, turned by foot treadle. Leopold [Mozart, the father] and Wolfgang were both fascinated by the sound of the instrument, and Wolfgang wrote this piece for a blind harmonica performer. We got a copy of the piece recorded by the late Bruno Hoffman as a temporary place-holder.

As the dub drew near, however, a couple of issues came up. One was that the sound quality of the recording didn't come up to the standards of the rest of the score. Another was that Bruno Hoffman had played it on a glass harp—goblets filled with water—which meant that it was physically impossible to play all the notes that Mozart had written. Hoffman's tempo,

—CONTINUED ON PAGE 175

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BY OLIVER MASCIAROTTE

Cramped Quarters

Measuring Format Speeds and Feeds

ILLUSTRATION: MIKE CRUZ

This month, I'm forgoing speculative fiction to focus on some practicalities. Let's look at the numbers associated with a product's specifications and performance, also known as "speeds and feeds." Specifically, we'll examine data rate vs. word length, how much space high-density audio *really* consumes and why uncompressed audio just won't fit down a typical ADSL pipe.

Back in the first months of 1998, I worked up some numbers for "high-density" audio production. That spreadsheet has evolved over time, but it pales in comparison to Bob Stuart's MLP worksheet (www.meridian-audio.com/mlp/t_mlp.htm). Along with Bruce Nazarian's DVD-V bit-budget spread (found at www.recipe4dvd.com), I can get a sense of what's possible—or impossible—in terms of estimating data availability when planning most any CD or DVD title.

Why should you give a rodent's posterior about all this? Because, as my editor said, "we live in a hybrid world," where consumers have widely varying acquisition and playback capabilities. If you want your client's or your stuff to be available to the biggest market, then you need to consider storage and distribution requirements for that data.

To start with a simple case, take the CD format: 44.1 kHz times 16 bits times 2 channels results in a data rate of 1.4112 Mbit/second (Mbps) or 0.1764 MBytes/second. A full 60 minutes of that stuff requires 635.04 MB of raw storage space, excluding overhead. Nothing too scary there.

Now let's take a look at some slightly more involved numbers:

The table on the following page represents raw storage requirements for 20-bit audio, in Megabytes, again excluding overhead. A 20-bit word is a good compromise for music distribution because redithering a 24-bit final signal down to 20 bits saves a bunch of space—17% to be exact. Not to mention the data-rate reduction, which I'll get to in a minute. Playback at 20 bits also preserves sufficient dynamic range for even the quietest home listening environments, which are often much quieter than your studio.

I didn't include more than two channels of 192kHz, because only DVD-A supports that file type, and only two channels' worth at best. Score one for SACD. The same table with 24-bit files is a tad fatter, which, you may think, is why we have DVD: all that extra room to store long words. But no, my friend. HDCD works just fine to encode extra dynamic range on a CD, yet it failed in the marketplace. DVD was created to provide an all-singing, all-dancing replacement for the aging CD format, and most members of the consortium couldn't care less about fidelity. Fidelity doesn't sell.

The mighty DVD format labors under many serious limitations, one of which is the sustained data-throughput rate of the transport. To play your basic 96/24 5-channel material, you'll need a 11.52Mbps pipe, way

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CHANNELS VS. SAMPLE RATE FOR ONE HOUR OF 20-BIT AUDIO

CHANNELS	SAMPLE RATE			
	44.1 kHz	48 kHz	96 kHz	192 kHz
2	794 MB	864 MB	1,728 MB	3,456 M
3	1,191 MB	1,296 MB	2,592 MB	——
5	1,984 MB	2,160 MB	4,320 MB	——

too big for DVD and pushing your luck for 100BaseT, I might add. To the rescue comes lossless data compression in the form of Dolby's Meridian Lossless Packing. An MLP-packed version of worst-case material, what Meridian classifies as "Metal," would be only 7.18 Mbps on average.

MLP inspects multiple parameters when performing its magic, including dynamic range and spectral spread. So, a 96/24 5-channel solo piano track would, due to its wider dynamic range and statistically limited spectral composition, pack down to an average data rate of only 4.4 Mbps. That's within most any modern pipe's capacity.

Of course, DVD has other tricks to reduce data rate and storage space, like half-rate groups for rear channels and LFE, along with better downmix abilities than DVD-V. Because listeners who have stereo playback would apparently be less interested in spatialization, one could safely assume that, for multichannel material played back in a 2-channel environment, tonal balance is the important issue when downmixing. Given that, MLP's downmix abilities should suffice for the majority of cases, eliminating the need for a separate Lt/Rt mix—in the audio zone, anyway. MLP also eliminates the need to redither 24-bit material to 16 or 20 bits, because it "knows" how to eliminate any unused dynamic range in the data.

Earlier, I threw out some numbers with the caveat, "...excluding overhead." This brings me back to storage issues and that overhead. If you dig around in DVD-Audio bit-budget calculations, then you'll find a better than 50% discrepancy in the storage overhead required between PCM and packed files. The difference turns out to be related to DVD sector formatting. Bob Stuart at Meridian Audio helped to create MLP and was kind enough to explain that, "...because MLP carries decoder instructions very efficiently in the stream, it is possible to use less overhead in the headers of each disc sector than is possible in the LPCM case...In fact, MLP is the most efficient stream in the DVD family. Moving video is less efficient than LPCM, and the lossy-compressed stream options (e.g., MPEG, DTS, Dolby Digital) are also packed less tightly on the disc." MLP has better fidelity as well, I might add.

Now, this is all fine and good for physical media: Format your disc, burn it and watch 'em march out the door into the open arms of Jane Q. Public. But what I think is more interesting is the data rate required to push these files through a pipe. Maybe you're sending a mix out for approval via the public network. Or, maybe you work in a broadcast environment, where folks think nothing of playing audio over a LAN. I know...as Marvin might say in this situation, "Don't talk to me about jitter." Ethernet, 1394 and most other LAN-like mechanisms exhibit absurd amounts of jitter, but that's not important in this discussion, and, yes, jitter reduction can be achieved if needed. The point is that the aforementioned 1.4MB/second rate for CD-quality material can easily travel uninterrupted down a 10BaseT connection if you have the right hardware. Increasing the word length to 24 bits brings that rate up to 2.1 MB/second, making things more difficult for low-speed Ethernet. Of course, fast Ethernet would ensure uninterrupted service, but what about trying to move that data over a "broadband" connection?

I don't know about you, but my ADSL service is the cheap version, typically providing 384 Kbps, topping out at about 512 Kbps, and only in the download direction at that. The alternative is a download-to-disk approach, which works great as long as the number of channels and duration remains low. As my colleagues and I have found, it's painful even with ADSL or cable to move multichannel, high-density files around on the public network. An alternative is SDSL service, which should come with a Service Level Agreement, or SLA, that guarantees some minimum QoS and monetary compensation for outages, if you can afford it.

Another desirable feature for which you pay extra is a fixed IP address. This means that your local host can be addressed from a remote location, say, your client's place. This assumes that you've configured your machine for insecure but convenient FTP access ahead of time. Consumer broadband accounts sometimes offer fixed IP addresses as a value-add, but usually your router, gateway or modem is assigned an IP address dynamically, making it tough to FTP into your local network.

So, there you have it. My 512Kbps "broadband" pipe can really only carry about 5 bits of 44.1 stereo audio, not too hi-fi by anyone's standard. So, I continue to groove to the dulcet strains of lossy codecs, the subject of next month's "Bitstream." Until then, stay warm!

Thanks to reader George "The Red" Blood for suggesting this column's subject. Got a topic? Give a shout and I may write it up. For links, back issues and occasional commentary, visit http://senecschal.net. ■

O.Mas has just returned from a long weekend of winter camping on the brawny shoulders of majestic Mt. Whitney. He took his iPod, so this column was created while under the influence of 192Kbps VBR stereo MP3s.

Manny's Music

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PRO AUDIO!

THE NUMBER 1 CHOICE FOR PRO AUDIO GEAR!

Aardvark Pro Q10

Direct Pro Q10 is a computer based digital multi track recording solution from Aardvark. Powerful DSP-based virtual mixing software eliminates the need for an external outboard mixer

Zoom MRS-1044 Digital Multitrack

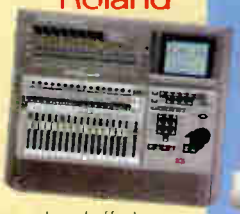
The MRS-1044 is a digital multi track workstation, featuring 10 audio tracks, a programmable stereo drum track and a programmable bass track for a total of 13 tracks.

ZOOM

Roland VS 2480 24 Track

Roland

The VS-2480 is the first self-contained recording workstation to offer 24-track/24-bit digital recording with 64-channel digital mixing, onboard effects processing and optional CD burning.



Yamaha Motif-8 88-Note Workstation

MOTIF combines the best features of a number of recent Yamaha products into an all-in-one music production workstation that will revolutionize the way music is made.

MOTIF

Novation SuperNova II Synthesizer

The Supernova II Keyboard features a 5 octave velocity sensitive keyboard with aftertouch.

novation

Tascam DM-24 Digital Mixing Console

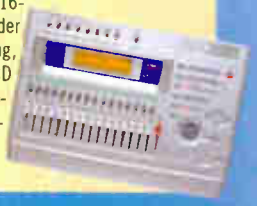
The TASCAM DM-24 is the first affordable digital mixer that combines 24-bit, 96kHz audio quality with highly flexible routing, extremely powerful built-in automation, built-in professional-quality effect and dynamics processing and parametric EQ

TASCAM

Korg D1600

KORG

The Korg D1600 is a 16-track digital recorder that packs recording, mixing, and final CD mastering into a professional quality all-in-one unit.



Alesis Hard Disk Recorder

The HD24 from Alesis delivers 24 tracks of Hard Disk recording at an unbelievable price, and offering incredible performance and stability, thanks to Alesis' unique method of writing to the hard drive designed and built exclusively for recording music.

ALESIS

Millennia Media STT-1 Origin

Millennia's new STT-1 Origin is like having a large rack of vintage and modern outboard recording equipment with over 130 product combinations!

T.C. Electronics Voice Prism

VoicePrism is an entire vocal channel under preset control.

t.c. electronic

Mackie MDR24/96 Digital Multi Track

Mackie's new MDR24/96 is the perfect price-busting commitment to non-linear hard disk recording for the first time recordist or those replacing aging gear!

MACKIE.

Avalon VT-747SP

AVALON DESIGN

The Avalon VT-747SP combines a creative STEREO tube-discrete Class A spectral-opto-compressor with a musical six band program equalizer, L-R output level and gain reduction metering and internal regulated power supplies in a 2U space.

Focusrite ISA-430

Focusrite

The ISA 430 is truly a "Producer's Pack", which combines the best of analogue and digital technologies, the first Focusrite product to include a range of different classic Focusrite modules in a single unit!

Presonus Digimax 8 Channel Microphone Preamp

PreSonus

The Digimax combines 8 channels of pristine mic preamplification with 24 simultaneous digital and analog outputs.

Mark of the Unicorn 2408MKII

Mark of the Unicorn, Inc

If you've been wishing for hard disk recording, the 2408mkII can now make your dream a reality at an affordable price. The 2408mkII gives you 24 simultaneous inputs/outputs for under a grand!

Tannoy System 800A

180 watts with 8" bass transducer.

TANNOY

Event PS8

The PS8 by Event features an 8" Magnetically shielded low frequency driver.

Genelec 1030A

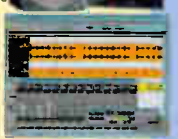
GENELEC

Bi-amplified Powered Studio Monitors ideal for nearfield monitoring, broadcast monitoring, video post production or where space is very limited.

Emagic Logic Audio Platinum (Mac/PC)

Utilizing the most advanced software technology available.

emagic



Steinberg Nuendo

Nuendo is compatible with virtually every format available today, allowing sources from many different places to be easily integrated into your project.

Steinberg

AKG Solid Tube

AKG has combined the benefits of tube and solid state technologies so you get the much sought after warm sound provided by tube microphones with the reliability of state-of-the-art circuitry.

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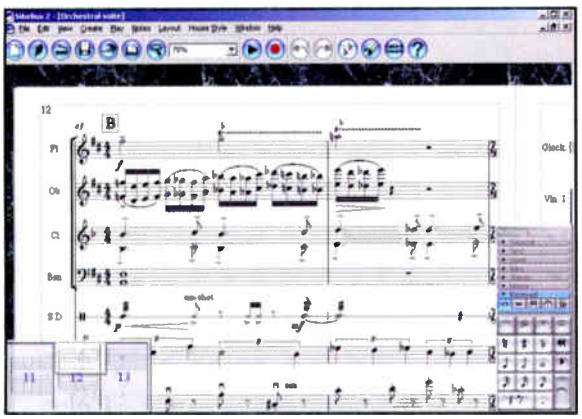
MENTION CODE MMIX2

New Hardware/Software for Audio Production

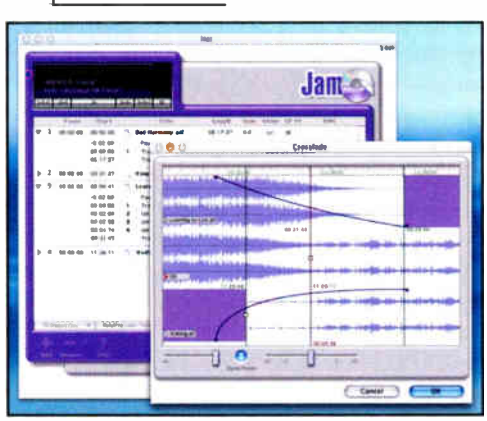


SIBELIUS 2

Sibelius 2 for Mac OS X and Windows is now available from Sibelius Group (www.sibelius.com) with more than 200 added enhancements. Redesigned with a look that complements the interfaces of Mac OS X and Windows XP, new features include artificial intelligence (to arrange/orchestrate music automatically) and mouse-less music input for using nearly every Sibelius feature—copying and pasting and moving lines and staves. Other features include enhanced rubato and rhythmic feel for a more human-sounding playback, 11 new plug-ins (including an application that instantly adds string and brass fingerings), color graphic import capability, and the ability to let people print and save music from your Website with Scorch. Sibelius 2 calculates and displays precise timecode (time position from the start of the score) above bar lines, and calculates the exact duration of the score and prints it on the last page. Sibelius 2 includes a free upgrade of PhotoScore Lite 2 to scan printed sheet music into the system. List is $599.

MOTU DIGITAL PERFORMER 3.1

Mark of the Unicorn unveils Version 3.1 of its Digital Performer workstation software. Upgrades include a Multiple Undo function (with an Undo History window and time-stamped action list of project actions), and users can navigate through undo "branches" in the history tree. Timeline Undo provides a time-based representation of a session; by clicking anywhere on the timeline, a user can instantly jump to the state of the project at that point in the session. Also new in 3.1 is surround support in the Waveform Editor—users can destructively cut, copy and paste multichannel audio, or use the pencil tool to edit out clicks and pops in an individual surround channel. Many new features are designed to accommodate users who are familiar with Pro Tools: The multitrack Sequence Editor, which displays independently resizable audio and MIDI tracks in one window, can now trim multiple audio regions at one time. A new I-beam tool has been added to the Tool palette to make time-range selection more intuitive. Loop-based production enhancements include the ability to audition and import Propellerheads Recycle REX 2.0 files, loop drag-and-drop, auto-conform capability and more. DP 3.1 introduces several new MIDI and post-production features; visit www.motu.com for details.

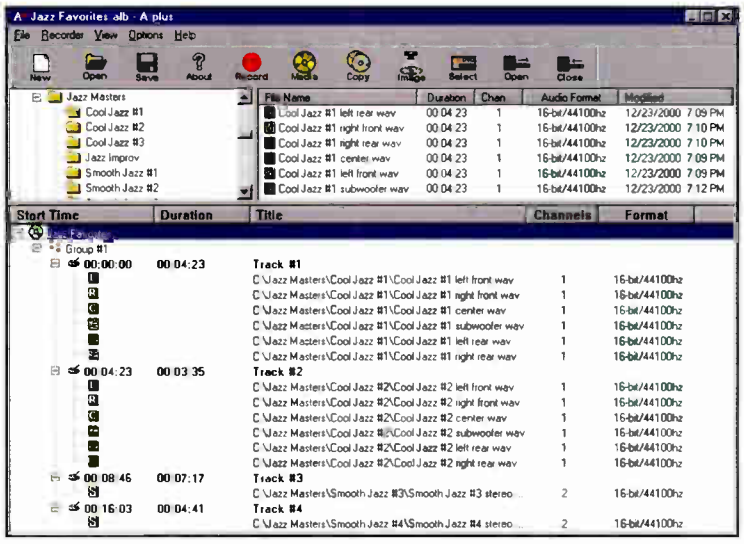


ROXIO TOAST WITH JAM

Roxio (www.roxio.com) debuts its Toast with Jam CD and DVD recording software for the Mac with CD mastering features. Toast with Jam includes Toast 5 Titanium to burn photo, video, music and data to CD and DVD; and Jam 5 for editing, arranging and burning CD masters. Jam 5 features a more flexible crossfade tool using a graphical waveform interface, a Dithering feature and support for 24-bit audio files. The system also features an updated version of BIAS Peak LE VST, which includes multiple VST effects plug-ins. Toast with Jam is built for OS X and supports OS 9 users. Retail is $199.

EMAGIC ES2

ES2, the latest synthesizer in Emagic's (www.emagic.de) Software Instruments line, offers up to 16-note polyphony per unit, with three oscillators per voice. (Oscillators 2 and 3 can sync to oscillator 1.) Analog and digital waveforms (including FM, Ring Mod, Noise and more) can be used as sound sources, and timbre is shaped with two self-resonating filters, running in serial or parallel: One filter is a multi-mode filter with distortion circuit, and the other is a lowpass filter with selectable slope and fatness parameter. (The lowpass can also be frequency-modulated by oscillator 1.) Additional synthesis options include a sine wave from oscillator 1 that can be mixed with the filter output, a built-in distortion circuit, and a time-based effects processor, with independent intensity and speed controls (with chorus, flanging and phasing). The ES2 runs under any program in the Logic Audio Series from Version 5 upward, and is copy-protected with Emagic's new Expandable System Key, a programmable hardware key for the USB port that includes the Logic 5 license and



temporary licenses for all Emagic software instruments, so users can try out software instruments for one month without functionality restrictions. Retail: $249.

MINNETONKA A-PLUS

A-Plus is Minnetonka's (www.minnetonkaaudio.com) new system for creating DVD-Audio discs. The software is designed for simplicity: Users drag-and-drop sound files to create a playlist and hit Record to burn a disc. The program accepts 5.1 surround recordings as six sound files or as an MLP-encoded sound file (stereo recordings are also accepted); the program will automatically create an onscreen menu from track and group titles. The menu can display up to 30 items. A-Plus supports all DVD-A sound file formats including bit depths of 16, 20 and 24 bits, and sample rates of up to 96 kHz in surround and 192 kHz in stereo. The system runs on Windows 98, 2000 or NT operating systems, and is compatible with DVD-R and DVD-RW media and Pioneer S201, Pioneer A03 DVD drives. Compatible sound files include .WAV, .AIFF and .MLP.

SPINAUDIO 3DPANNER

The 3DPanner Motion Effects is a VST/DX audio plug-in from SpinAudio, based around 3-D positioning using a binaural panning technique from HRTF functions; users can place sound in a 3-D sound field using conventional stereo output. The plug-in is derived from SpinAudio's 3D Panner Studio, but while 3DPanner Studio supports only static positioning, 3DPanner Motion Effects allows continuous changes of 3-D position. Besides supporting VST automation, which allows users to draw a free motion path, 3DPanner Motion Effects offers three oscillators on x, y and elevation to create simple or complex motion curves. The plug-in supports VST 2.0 MIDI interface that allows synching of motion start/stop and control oscillators in real-time via MIDI control messages. A plug-in MIDI Map editor is provided for custom tuning, and Steinberg Nuendo users can use Nuendo's channel surround panner to control the plug-in.

UPGRADES AND UPDATES

Berklee Press released *Producing in the Home Studio with Pro Tools* (by David Franz), which breaks down setting up the system, pre-production and production, with mixing and mastering tips. Also new from Berklee Press, *Finale: An Easy Guide to Music Notation*. Visit www.berkleepress.com...MOTU's (www.motu.com) first product for Mac OS X is a **USB MIDI driver for all of MOTU's MIDI interfaces**, including the 2x2 FastLane USB, 4x6 micro-express USB, 8x8 MIDI Express XT-USB, and the 8x8 MIDI Timepiece AV-USB interface/universal synchronizer. In other MOTU news, **Synchro Arts' Vocalign is now compatible with Digital Performer 3**. Check out www.motu.com for details...**Discrete Drums** released its Series One collection of drum performances in a Roland format, as well as Phrazer loops. Check out www.discretedrums.com...Check out the **Strings Reason Refill collection**, which lets you add new string patches and REX loops to your Reason system. Files include various individual strings, quartets and orchestral strings. More info at www.propellerheads.se...**Dissidents released Version 5.2 of its Sample Wrench** sound editors: The entire family of editors from Sample Wrench XE to Sample Wrench 24/96 have been cut in price by up to 50%. Check out www.dissidents.com for a fully functional demo...**IK Multimedia's SampleTank 1.1 is now available for MAS**; check it out at www.sampletank.com...Ableton announced a free update of LIVE for Mac OS X. Ableton is now distributed in the U.S. by Midiman; visit www.ableton.com or www.midiman.com. ■

Preview

PMC SUB BASS UNIT

The new TLE1 active subwoofer system from PMC (distributed in the U.S. by Bryston; www.bryston.ca) features an unusually tall and slender profile—the unit measures 21.5x7.75x19.75 inches (HxWxD) and weighs 42 pounds. Two 6.5-inch, shielded custom woofers are driven by a 150W, ultra-low-distortion amp based on a Bryston design. Featuring a true transmission line design with an effective length of 9.5 feet, the TLE1 offers a flat frequency response down to 22 Hz. The unit has stereo balanced XLR and unbalanced RCA inputs, level control with calibrated settings for THX® specifications, variable phase control (0°-360°) and a variable roll-off (12 dB/octave) from 38 to 155 Hz.

BRAUNER VALVET VOICE LIMITED EDITION

German microphone craftsman Dirk Brauner has introduced the Valvet Voice® Limited Edition tube vocal microphone. Distributed by Transamerica Audio Group (www.transaudiogroup.com), the Valvet Voice LE offers a cardioid polar response and features selectable phase invert, hard ground, soft ground or ground lift. Technicians hand-assemble each microphone from Class-A amplifiers, custom-built Lundahl transformers and JAN tubes, and Dirk Brauner himself hand-tunes each production unit. No more than 500 Valvet Voice LE microphones will be manufactured.

SOUNDELUX E47 TUBE MIC

Soundelux Microphones has introduced the E47 tube condenser microphone. Distributed by the Transamerica Audio Group (www.transaudiogroup.com), the variable-pattern E47 is designed to emulate vintage Neumann and Telefunken tube condensers, but with a lower noise floor, better top end, improved reliability, lower maintenance and a three-year warranty.

GRACE DESIGN HEADPHONE AMP

Grace Design (www.gracedesign.com) offers the Model 901 Reference Headphone Amplifier, a rackmount stereo unit that accepts either analog or digital stereo sources. A front panel, 24-position rotary pot provides precise output level control; level matching between stereo channels is an unprecedented 0.05 dB. A front panel switch selects either analog or digital sources, and a 4-LED array displays digital source sample rates between 32 and 96 kHz. Two sets of headphones can be used simultaneously, connecting via a pair of front panel, parallel-wired outputs. Inputs include AES3 (XLR), S/PDIF (RCA) and Toslink optical digital; the 901 accepts +4dBu and -10dBV analog sources via XLRs and unbalanced RCA jacks. The 901 employs high-current, trans-impedance output amps for driving low-impedance headphones, and the unit includes an ultra-low-distortion, 24-bit DAC. Sealed gold-contact relays are used for all signal switching. Price: $1,495.

TELEX CD DUPLICATORS

SpinWise CD duplicators from Telex Communications (www.telex.com) feature 24x speed drives, enabling them to copy a full CD in under three minutes. All SpinWise duplicators offer Disc-at-Once support for audio, support for multiple CD formats, including all sizes of business card CD format, and a 24x recording speed. Models in the SpinWise line include 1-24, 50-24, 3-24 and 6-24 models. SpinWise 1-24 is a rackmount, 1-to-1 disc duplicator for low-volume applications. A digital readout indicates percentage of the disc that has been copied, and rejected discs are automatically ejected. SpinWise 50-24 is a standalone robotic system with a 50-disc capacity and the ability to reload media on-the-fly. SpinWise 3-24 features three internal hard drives and can make three copies at once. Alternately, the unit can act as a 1-to-2 disc copier. SpinWise 6-24 features six internal hard drives and can also act as a 1-to-5 copier. The three-rackspace SpinWise 6-24 is designed for production and studio applications.

OTARI RADAR-II FOR $8K

Otari Corp. (www.otari.com) has reduced the price of its legendary RADAR-II® Hard Disk Recorder. The package offers 24 channels of analog I/O, 24 channels of digital I/O via TDIF, two channels of S/PDIF and AES/EBU digital I/O, a full-function remote control, a meter bridge and backup system, as well as additional user options and a one-year parts/labor warranty. The price cut brings the cost of a fully loaded RADAR-II system to $7,995. For a slight additional cost, the 24 channels of TDIF can be replaced with 24 channels of AES/EBU digital I/O, and the DVD-RAM backup device can be replaced with an Exabyte drive. A "super-sized" RADAR-II system adds a second HDR for 48-track digital recording.

M-AUDIO SHIPS DELTA 410

M-Audio division of Midiman Inc. (www.midiman.com) is now shipping the Delta 410 audio interface to U.S. markets. The Delta 410 functions as a 4-input, 10-output digital recording/playback interface for home studio multitracking and multichannel playback. The unit features two analog inputs and eight analog outputs, plus coaxial S/PDIF digital I/O at up to 24 bits and at sampling rates from 8 to 96 kHz. The eight analog outputs accommodate 5.1 to 7.1 surround applications, while the S/PDIF output allows AC3 or DTS to be streamed to an external decoder. The included Delta Control Panel software provides comprehensive digital mixing, routing and monitoring capabilities. Delta Series PCI-based analog and digital audio cards for the Mac and PC platforms are fully expandable and universally compatible. Like other Delta Series products, the Delta 410 is compatible with Windows XP and Mac OS, and supports ASIO, EASI and GSIF. Hardware sample-accurate sync allows linking multiple Delta units.

HENRY ENGINEERING PATCHBOX

The PatchBox from Henry Engineering (www.henryeng.com) is a passive "output multiplier" for distributing stereo line-level signals to multiple recorders and/or processing devices. From one stereo source, the PatchBox creates five balanced and six unbalanced stereo outputs. The PatchBox accepts both balanced and unbalanced inputs, and is compatible with any active balanced (transformerless) low-impedance signal source that is ground-referenced. Balanced outputs, on XLR and ¼-inch TRS connectors, provide a unity gain signal with a 600-ohm source impedance. Unbalanced outputs, on gold-plated RCA connectors, provide signals compatible with consumer gear. Because audio equipment input circuits are normally high-impedance ("bridging"), any combination of outputs can be used simultaneously without interaction or signal degradation.

HOT OFF THE SHELF

Pulizzi Engineering offers an all-new, expanded 2002 Product Design Guide to the company's range of AC power distribution and control systems. Including product specifications, images and a selection of custom systems manufactured to meet specific client requirements, the guide is available in both hard copy and downloadable formats. Call 800/870-2248 or click on www.pulizzi.com...**Canadian sound effects and production music producer Sound Ideas has introduced seven new products**, including *Ship Shape*, a six-CD library of marine and ship-related effects. Also new are the two-CD collections *Thunder Series*, *Crash and Burn* and *Power Surge*, while full-length tracks, music beds, loops, segues, tags hits and bumpers may be found on the 10-CD *Mix IX Rhythm Track Library* and the five-CD *Mix VIII Imaging Elements Library*. Call 800/387-3030 or visit www.sound-ideas.com...***Music Copyright for the New Millennium*** **by David J. Moser** provides readers with a thorough understanding of copyright law as it applies to music. In an easy-to-understand style, this book offers explanations of the relevant provisions of U.S. copyright law and demonstrates how they are used in the music industry. Published in paper by ProMusic Press, the book is priced at $39.98, and may be ordered from www.artistpro.com, or call 707/554-1935...**HHB's new range of advanced, double-coated, metal-particle DTRS** tapes are available in three lengths. The HHB DA30DC, DA60DC and DA113DC are designed for both 16-bit and high-resolution DTRS recording applications, and are officially approved by Tascam. Call 310/319-1111 or surf to www.hhbusa.com...**Clark Wire & Cable's redesigned dual-pair AES/EBU digital audio cable** now includes different color combinations (white/red, white/green, white/blue and white/purple) plus a bonded foil for easy stripping. Clark offers special pricing monthly on selected cables. Call 800-CABLE-IT or check out www.clarkwc.com...**Verbatim Corporation expands its DataLifePlus family** of write-once and re-writeable DVD media to include DVD-R, DVD-RAM, DVD-RW and DVD+RW media in capacities ranging from 3.95 to 9.4 GB. Prices are $9.95 for 4.7GB DVD-R discs; $19.95 for 4.7GB DVD-RAM media and $35 for 9.4GB double-sided DVD-RAM media; $19.95 for 4.7GB DVD-RW discs; and $16 for 4.7GB DVD+RW media. Call 704/547-6500 or visit www.verbatim.com. ■

BY GEORGE PETERSEN

Solid State Logic XL 9000 K Series

High-Resolution/Bandwidth Analog Console

The next generation of analog consoles from Solid State Logic has arrived: the XL 9000 K Series. At four private showings last month in Los Angeles, New York, England and Tokyo, SSL unveiled its new high-performance analog console, which is designed specifically for the needs of DVD-Audio, SACD and surround sound mixing.

REV IT UP!

The new XL 9000 K Series is SSL's first totally new analog console since the debut of its award-winning J Series in 1994. This new release brings audio performance to the next level, with a bandwidth said to extend nearly two octaves beyond that of a 96kHz recorder. Audio purity was a major design goal, and the K Series incorporates touches such as DC coupling, short signal paths, no electrolytic capacitors in the audio pathways, OFC (oxygen-free copper) internal wiring, fully balanced mix buses, and a new SuperAnalogue™ all-discrete mic preamp design with quieter, more transparent circuitry that exceeds the specs of any previous SSL preamps.

Taking the improvements of the new preamps further, a Super-Pre™ option creates blocks of eight to 24 mic preamps in a package remotely controlled from the console, with Total Recall of all settings. Remoting the mic pre's improves signal quality by reducing the critical mic-to-preamp cable distance, and conventional-looking console gain knobs allow an engineer to control the stepless, servo-driven remote potentiometers on the Super-Pre unit in the studio. Additional switches on the board adjust the 48VDC phantom power, high/low-impedance setting and -20dB pad in/out functions—all without leaving the control room.

The new K Series processor running the console automation is up to 100 times faster than that used on the J Series, but it also adds features such as screen display of individual transport positioning (for easily setting multimachine offsets) and Online Mix Compare, for auditioning up to six different mix passes without interrupting playback. Compatible with nearly 200 SSL J Series consoles in use worldwide, the K Series supports the import and replay of Total Recall information from J Series consoles, as well as relevant data from G Series boards.

To maximize flexibility and display the system's enhanced graphics—including new Advanced Photo Realistic Total Recall™—the center of the console is fitted with a multi-angle, high-res TFT screen. An additional X-VGA input allows the TFT display to be switched from console operations to a workstation output. Similarly, the system's wireless mouse, infrared QWERTY keyboard and pen/tablet can be switched to control any USB peripheral, computer or DAW. This facility, combined with SSL's familiar tape recorder-style transport buttons, provides for simple system integration and allows the engineer to remain in the console sweet spot. Speaking of transport control, the K Series can run both parallel and 9-pin devices simultaneously, and both SMPTE LTC and MIDI Timecode generators can be active at the same time.

ULTIPAN

One of the K Series' most intriguing features is its UltiPan™ screen-based panning, which enables various styles of automated panning across two, three, four or five outputs. Conventional X/Y axes offer panning across a 2-D soundfield, with center focus and divergence controls for bleeding signals across the LCR outs for phantom center effects. A Freehand mode allows users to pan anywhere within specific soundscape axes, with full dynamic panning between any designated sets or pairs of speakers. The slickest mode within UltiPan is ThetaPan™, which can spread a point source signal across adjacent speakers without the need for divergence controls, while also permitting precise circular pans (with width control). Up to six automated UltiPan panners can be used simultaneously; additionally, LCR panning is provided on every channel, as are LCR focus controls and surround routing on effects returns.

The console's expanded center section adds flexibility and more functions, yet retains the SSL operational familiarity. A full 5.1 mix bus, master fader and mix compressor, and full simultaneous fader access to all mix buses are standard. Monitoring sources include the main 5.1 mix, three 5.1 mix returns and 15 other signal sources. A downmix matrix allows the fast creation of 5.1-to-stereo mixes, with user control of center, surround and LFE channels feeds. An insert point for surround encode/decode systems is available, as is switched access to -12dB/octave lowpass filters for generating LFE signals in Dolby Digital (120Hz) or DTS (80Hz) formats.

Adding to the K Series package are an attractive Raven Sparkle appearance and a new frame design. The console is available in any number of configurations, ranging from 24 to 120 (or more) channels—with wings if required by customer/facility needs. Options include the remote preamp packages and the award-winning 956 Multi-Stem/Scoring system developed for the 9000 J. Next month, the first XL 9000 K Series mixers are slated for delivery to Larrabee West (West Hollywood) and two to Hit Factory in New York City.

For more information, visit Solid State Logic at www.solid-state-logic.com. ■

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BY MARK FRINK

Midas XL-42

Preamp/Equalizer

Over its 30-year history, Midas has produced several "classic" live sound consoles, and many of the world's top sound engineers swear by the sonic excellence and reliability of Midas' XL4, XL3 and Heritage consoles. Engineers consistently cite the preamp and EQ circuits of the XL4, in particular, as their favorites; with the XL-42, Midas offers two channels of the XL4's mic preamp and EQ circuitry in a compact and relatively affordable package.

In addition to mic pre and EQ circuits, the one-space rackmount, dual-channel XL-42 incorporates a 48-volt phantom supply. Each channel provides 15 to 70 dB of gain, plus switches for a 25dB pad, phantom power and phase reverse, and there are rotary controls for input, output and pan. The unit offers 10-segment LED metering for each channel, plus a switchable insert send and return point. Each channel also has DIP switches that enable auto-mute scene control from the auto-mute masters of Midas XL consoles.

By itself, the XL-42 can be used to add Midas mic pre's and EQ to any other brand of console; simply return the XL-42's outputs to an insert point or input. You won't find many consoles where this arrangement isn't preferable to the stock mic pre's and EQ. I carried an XL-42 on tour last year with k.d. lang, using one channel for her vocal mic and the other for David Piltch's upright bass pick-up. The quality and ease of operation was obvious to us all, and I don't think I would ever use anything else for my "money" channel. The XL-42 also makes a good stand-alone front end for stereo recording applications, or can serve as mix EQ on console outputs that need a quality parametric EQ.

The XL-42's gain and EQ controls function almost exactly like those on the XL4 console, making it immediately comfortable to work with for those already familiar with Midas boards. Other than missing a high-cut filter, the EQ is the same as on the XL4. The 12dB/octave low cut sweeps from 10 to 400 Hz. Switches on the low- and high-frequency bands, labeled "bell," switch them from the traditional Midas shelving response to cut-or-boost, like the midrange. All four parametric bands overlap generously, with each covering half the frequencies of its neighbor. Filter width is on a concentric ring outside the dB knob, adjustable from a narrow tenth of an octave to 2 octaves. The center detent position gives a filter width of half an octave, typical of a graphic EQ filter.

Because there's simply less space available, the XL-42's 10-segment LED metering is shorter than the console's 20-segment display. The LEDs start at -12 dB and end at +15 dB with a red LED. Because there's usually additional metering, plus cueing on the console to which the XL-42 is returned, this limited metering is quite workable.

Bantam send and return insert jacks on the back of the XL-42 may require a special cable if you're not using it with a similarly equipped patchbay. The insert points are set pre-EQ at the factory, but they can be converted to post-EQ via internal jumpers. Normally, any post-EQ processing simply follows in the signal chain, but there is another way to hook up the outputs.

Two XLR line-input Link connectors, combined with the pan controls for the outputs, allow multiple XL-42s to be "daisy-chained" to create a stereo mixer. When linked together, the combined pans and output levels sum, producing two discrete channels. Any required dynamic processing can be inserted at the XL-42's insert points, creating a custom sub-mixer.

If a show requires, for example, a few more channels than the input capacity of the master console, then XL-42s can provide additional inputs, two at a time. The resulting stereo output can then be routed to the master console via any convenient point, such as a pair of auxiliary or sub returns, and group or matrix inputs. On the rear, a DB-9 connector allows the XL-42 to be connected to a main console's mute system, and DIP switches allow assignment to any of eight mute groups. This ability to daisy-chain multiple units, going from the output of one to the Link input of the next, permits the creation of a custom mixing console. In fact, several XL-42s and a Midas XL88 matrix mixer would make a powerful rackmount console.

The XL-42 lists for $2,003. The Klark Teknik DN-422M ($1,838 list) is a nearly identical KT-branded model that only lacks the XL-42's ability to daisy-chain, along with the pan pots, insert points and mute system.

Midas, 12000 Portland Ave. South, Burnsville, MN 55337; 800/392-3497; www.midasconsoles.com. ■

Mark Frink is Mix's sound reinforcement editor.

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Bag End TA-6000

Compact Sound Reinforcement Fill Speaker

Bag End has earned its reputation as a manufacturer of compact loudspeaker enclosures featuring accurate sound reproduction. The company offers a wide range of full-range speaker systems for touring, club, DJ and installation applications, and it produces studio monitors, home and commercial cinema sound systems, and musical instrument speakers.

The TA-6000 two-way passive loudspeaker, available in install and road versions, is a low-profile model featuring the skinny "D'Appolito" form factor with a single tweeter positioned between a pair of 6.5-inch woofers. The speaker's compact size and shape make it particularly well-suited for stage-lip frontfill and under-balcony applications. A new low-profile, horizontally optimized version, called the TA-6000-S ($735 list), is only six inches high and is designed to fit into stair steps. This model would also make an excellent choice for a center-channel playback speaker in a surround sound setup.

The standard trapezoidal TA-6000 speaker cabinet (TA-6000-R road version: $690; TA-6000-I install version: $620) measures just under two feet long, almost a foot deep and nine inches wide, with a 10° taper front to back. The cabinet is made from birch plywood coated with black-textured, catalyzed urethane, and includes rigging attachment points, a stand adapter and a rugged steel grille. A port on the back tunes the enclosure for added response around 160 Hz (and serves as a convenient handle). The two 6.5-inch woofers are crossed over (at 2.1 kHz) to a 1-inch exit compression driver mounted on a small radial horn, the same high-frequency driver as in Bag End's TA-2000, TA-1200 and AF-1 models.

The TA-6000 has a nominal dispersion of 80° horizontal by 60° vertical. The quasi co-ax form factor controls vertical dispersion to reduce ceiling and floor bounce, and improves focus and clarity. With a sensitivity of 95 dB (1w/1 m) and peak power handling of 600 watts, the TA-6000 puts out enough sound to cover near-field listening areas for any application. One popular theory regarding the proper use of frontfills is that they must get loud enough to support the entire mix, because all other speakers will be delayed back to match the arrival time of the frontfill signal. The TA-6000 is one of the loudest speakers of this type, and it can produce maximum SPL of 127 dB above 200 Hz at 1 meter.

The TA-6000's contoured response is smooth—exhibiting only one peak at around 1.8 kHz, just below the crossover frequency, which I found helpful for vocal articulation—but is also easily equalized. Bag End's philosophy is to favor time-domain performance over frequency response near the crossover point, and given the resulting clarity and imaging, this is an acceptable trade-off. I found that Bag End's proprietary Time-Aligned passive crossover electronics provided studio-quality detail, a feature that was easily apparent when I compared the TA-6000 with similar designs.

The highs are nearly flat out to 8 kHz, and gently fall off above that, a pleasant feature for any near-field application. The ported woofers provide a nicely contoured response, dipping around 250 Hz. The rear-port tuning gives the unit ample response in the last octave, and the speaker falls off smoothly below 85 Hz. The TA-6000 offers enough apparent bass and useable low end for most full-range foreground applications, while also providing a musical transition in the crossover region when supplemented with subwoofers.

As with other rear-ported enclosures, the TA-6000's low mid response changes when the cabinet is half-space loaded, such as when placed against a wall. In this configuration, the TA-6000 loses about 5 dB around 300 Hz, enhancing and smoothing the frequency contour in the low mids. Wall-mounting these speakers produces a pleasant response, making them an especially good choice for distributed sound and proscenium-edge fill applications.

The connector plate on the back of the TA-6000-R has two ¼ inch jacks in parallel with dual banana terminals and two Neutrik NL-4 Speakon connectors. Both

Speakons are fully wired, passing signals on the unused number 1 pair for jumping to an adjacent subwoofer. The TA-6000-I simply has a barrier strip in place of the road version's multiple connectors and doesn't have a stand adapter. Both models have ⅜-inch hex bolts on the top, back and bottom for use as rigging or mounting points. Optional rear-mounting or end-yoke brackets are available for half-space applications under balconies and against walls.

The TA-6000-R's stand adapter can also be used to pole-mount the speaker on a subwoofer to create a powerful, compact bi-amp speaker system, and when used with a double-12 Bag End ELF™, the TA-6000 makes a fantastic little P.A. The TA-6000 would also make a good choice for any or all surround sound speakers for boardroom and home theater sound systems.

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SOURCE CODE: MXBC

IK Multimedia T-Racks 24

24-Bit Mastering Software for Mac or PC

IK Multimedia's T-Racks stand-alone mastering software for PC and Mac is now available in a 24-bit version. The suite consists of a 6-band stereo equalizer, a "Tube" compressor, a multiband limiter, a dedicated output section and a stereo "widener."

T-Racks' entire focus is to simulate the sound of vintage-tube mastering gear, and the unique interface has been designed accordingly. Some may find it cartoon-ish, but there can be no doubt that the rotary pots, toggle switches and classic analog-style VU meters, all topped by a rack of glowing "tubes," positively convey the idea that this software is intended to interject analog warmth into digital audio.

T-Racks' GUI has been optimized for an 800x600 screen resolution and is not resizeable. Most of us will be using screen resolutions of 1,024x768 or higher. At the 1,280x1,024 resolution that I must use in my system, I found the text and controls of the interface—though still readable and tweakable—somewhat difficult to negotiate.

The suite consists of four basic modules and two control panels. Each module features a Bypass switch, as well as a Reset switch that resets all parameters to default values. Values for currently adjusted parameters are displayed in a small window in each module. Most of the default values can be changed and saved by editing an internal text file, a real time-saver as these can be created, saved per project and simply dragged into the T-Racks window.

The first module in the suite is the 6-band equalizer. This includes, from highs to lows: a highpass filter from 15 to 5 kHz; a high-shelving-type filter from 750 to 8k Hz; a high-mid peaking filter from 200 to 18k Hz; a low-mid peaking filter from 33 to 5.5k Hz; a low-shelving filter from 30 to 200 Hz; and a lowpass filter from 200 to 20k Hz. The low-mid and high-mid bands are semi-parametric and feature a Toggle switch for either "hi Q" or "low Q" bandwidth. Because this suite is intended to be used as a mastering tool, I feel that variable Q would be preferable; mastering often requires a series of small but precise tweaks. A linear representation of the current EQ curve is visible in the Scope view, but manipulation of the EQ curve on the Scope screen via the mouse is not possible.

T-Racks' processors include a 6-band stereo EQ, compressor, multiband limiter, soft-clipping output stage and a complete mastering suite.

Next in the chain (though the order of the first two modules may be reversed via the Patch switch) is the Tube-Comp compressor module. Threshold and release parameters are adjustable, as is the compression ratio, which may be varied from 1.5:1 to 4.68:1. An Input Drive control determines the relative threshold of compression, but, as is the case with many vintage-tube units, even at the lowest setting, some compression will still take place. The stereo widener control, a single knob, is also contained in this module. Oddly, when the Tube-Comp module is bypassed, the widener is also bypassed, so it is not possible to use the widener without having the Tube-Comp also enabled.

The Tube-Comp is followed by the Multiband-Limiter. The fact that this is a 3-band limiter is not readily apparent to the user. The only controls visible on the module interface itself are the Release Time, Overload and Input Drive controls, as well as the Reset and Bypass toggles. The rather ambiguously named Overload control simply varies the way the limiter controls peaks. Setting a lower value results in more frequent gain reduction; setting a higher value will result in less frequent gain reduction but more clipping. Adjustment of Multiband-Limiter crossover points and other parameters is not possible from the interface itself. However, as with other T-Racks modules, many parameters are adjustable by tweaking the internal settings via a text editor.

Last in the signal chain is the output section, which contains the master level control, a set of LED-type peak meters, a Mono Summing switch, stereo balance control, and the master output, level and "Sat" pots. The level control is actually a gain control for a final "clipping" stage. While not a "brickwall"-type limiter, it does allow you to gain a high degree of control over peaks. These peaks, though not usually audible, may need reduction in overall level order to avoid digital overs and thereby cause a decrease in perceived volume level—not a good

idea at the mastering stage. The Sat control allows continuously variable control over the shape of the peak limiting. Depending on the program material, harder or softer values may yield optimum results. Last, for CD mastering, dithering may be chosen from the Preference menu. Although some of this may sound a bit confusing to the uninitiated, the excellent online manual does a lot to clarify these issues. Factory and user presets per module or suite are available from this screen as well.

The control panel section allows you to open, play, process and save files, as well as apply fade-ins and outs. Fade time may be adjusted from 0 to 60 seconds, and either a logarithmic or linear curve shape may be selected and applied. The usual transport buttons and timeline are available, and markers may be dropped along the timeline. Finally, a menu bar at the bottom of the screen accesses a snapshot menu, a CPU meter, an Undo button, a large sample-accurate output meter and a Preference menu.

A recently completed CD project gave me a perfect opportunity to see what T-Racks had to offer. As soon as I loaded a file into T-Racks, it was immediately apparent that this software has a sound of its own. T-Racks does an excellent job of imparting the thickness and warmth associated with vintage-tube gear. The characteristics of the compressor and limiter sections were especially authentic, reminding me of some vintage Western Electric units I once owned. The EQ section, although somewhat limited, still had enough range to allow me to make final spectrum adjustments. Because the T-Racks does not have a true brickwall-type limiter, a bit of work was needed to tame the peaks, but the same can be said of the vintage-tube gear that T-Racks emulates! I almost overlooked the stereo widener, but I was surprised to see that it was quite effective in enhancing the overall stereo image, while not imparting any obviously artificial-sounding artifacts. I would like to see this feature independently available from the module it is tied to.

Detail of output section controls

T-Racks may not be the first software you choose for every mastering project, but it does what it is intended to do and does it well. Even with the higher bit resolutions available today, brittle or thin-sounding digital audio is encountered all too often. T-Racks mastering software is an ideal way to put some "fat" back into a skinny-sounding mix.

Special thanks to Derrell Brown, keyboardist extraordinaire, for "Mac testing."

T-Racks/IK Multimedia, 5911 Hickory Dr., Fort Pierce, FL 34982; 866/243-1718; www.t-racks.com. ■

Pete Leoni is an independent producer/engineer and, with his partner Morgan Pettinato, the founder of Q-Performance PC Audio Systems, a division of Eastcoast Music Mall.

BY EDDIE CILETTI

Great River MP-2NV

Stereo Microphone Preamp

Most electronic designers strive to create the most accurate and transparent circuitry possible. In a way, digitized audio is the result of such pursuits, yet the negative reactions forced many designers to reinvestigate the process. Is "ye olde stuff" really better? The answers are complex, but analog's idiosyncrasies are what everyone raves about. Realizing that recording engineers need a full-spectrum sonic palette, Great River designer Dan Kennedy went against his instincts of "accuracy first." True, there are times when transparent-clean is the best and only choice. Other times, a little grunge helps bring a more aggressive "street" feel to overly sterile studio tracks, especially now that analog tape has become more a piece of outboard than a standard part of the recording process.

Just as there is more than one way to skin the proverbial cat, Great River's MP-2NV stereo mic preamp takes a highly divergent path to achieve sonic nirvana. Different from other Great River or Neve 1073-based products, the MP-2NV was inspired by the ever-colorful Fletcher of Boston-based Mercenary Audio, with several key features increasing the unit's sonic options and flexibility.

ENTER THE MP-2NV

Listing at $2,499, this stereo unit is housed in a single-rackspace chassis, with transformer-balanced mic inputs on the rear and ¼-inch hi-Z (1-megohm) unbalanced instrument inputs on the front face. Each channel has individual rotary-input gain switches, output level pots, and switches for output termination, polarity reverse, phantom power and mic input impedance. Outputs are 600-ohm, transformer-balanced, line-level XLRs (maximum output level +27 dBm, terminated) with unbalanced TRS inserts between preamp, and output amplifiers for outboard such as compression and equalizers.

A traditional Neve module has a rotary switch for *coarse* gain with a console fader to *trim* the gain. (The switch actually dials-in various combinations of amplifier stages, gain and input transformer attenuation.) The MP-2NV includes an output stage level pot and metering for both stages. Input gain for the MP-2NV is in 5dB steps, output gain is continuously variable from -20 dB through unity to +10 dB. It is possible to purposely run the preamp hotter than the output amp, or vice versa.

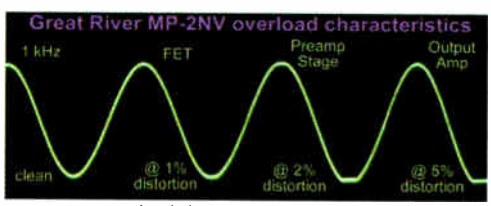

Figure 1a: Overload characteristics of a sine wave with distortion ranging from below .01% to 5%.

I found this extremely helpful when recording drums, placing a pair of Marshall MXL-2003 large-diaphragm condensers in an X-Y configuration about three feet from the kit and allowing 4 to 6 dB of headroom. Drummers' repeated "overs" occurred when going from verse to chorus. I turned down the output gain to minimum, cranked up the input gain—again allowing 4 to 6 dB of headroom, only this time there were no "overs"—and, there was no sign of undesirable distortion, with drums at least. How cool is that?

What makes these Class-A Neve circuits special is that when driven with hot transients, they behave just like peak limiters. There is even a dynamic recovery time, although that is not easy to show in print. You can see what happens to "static" sine waves in Fig. 1a. Note that each stage behaves similarly, clipping only half the wave first. Modern op amps clip symmetrically. In Fig. 1b, the third-octave display of the NTI Minilyzer indicates not only the second harmonic, but also a cluster of harmonics starting with the third.

Most people purposely abuse Neve gear, but these circuits have plenty of headroom, and the MP-2NV easily has 15 to 20 dB less noise than its vintage ancestor does. By consolidating all the plug-in cards onto one circuit board and using low-noise components throughout, the signal-to-noise ratio is in excess of 105 dB at 30dB gain and 96 dB at 60dB gain, unweighted.

GOING DIRECT

A traditional mic pre/active DI connects the instrument directly to the first amplifier, bypassing the input transformer. Fletcher insisted on using the input transformer for additional color, and, as unconventional as that might be, Dan Kennedy's solution was to put a FET impedance converter in front of it.

Even my humble Univox P-Bass copy

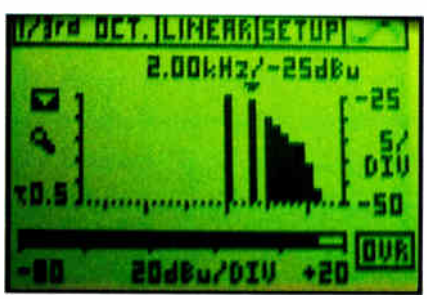

Figure 1b: A third-octave analyzer shows the spectral content of the MP-2NV output amp driven to 2% distortion. It is not easy to achieve this much distortion, considering the maximum output level is +27 dBm!

sounded surprisingly round through the direct input. It was not clangy, nor was there a silly amount of unnecessary subsonic disturbance. Although there's no metering to indicate FET overload, doing so is pretty obvious. I simply turned the level control down on the bass. Again, manipulating the input and output gain controls can massage the tone range, which is enhanced with a good technique and consistent touch.

To further trick out the MP-2NV, the input transformer has multiple windings, just like the Neve modules, but now the input impedance switch—with 50/200-ohm options—is on the front panel. This is cool if you have ribbon mics, plus the 50-ohm setting loads the FET for a different sound.

Output termination rounds out the options. Many people—accidentally or not—run the Neve modules un-terminated, resulting in a brighter sound from transformer ringing. (See Fig. 2.) By placing the option on the front panel, users can run either way and not have to futz with resistors, or ever have to go to the rear panel for anything other than input, output, insert and power connections.

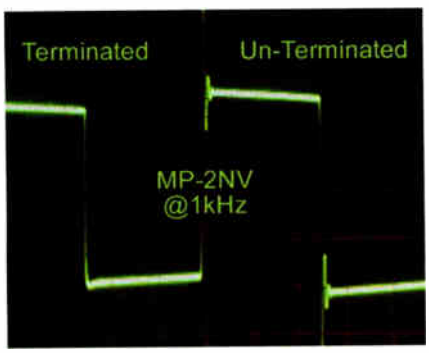

Figure 2: The effect of termination (and lack of same) on a 1kHz square wave. The un-terminated "spike" indicates transformer ringing that produces a 7dB boost at 50 kHz.

The Great River MP-2NV combines a recording engineer's needs with a design engineer's creative circuitry. The result is a more flexible preamp that provides the classic sonic airbag protection, especially on drums, for which vintage Neve Modules are well-known. There is plenty of gain and less noise than the vintage originals, well-suited for delicate acoustic work even when using a ribbon mic. Offering a remarkable level of sonic versatility plus ease of use, the MP-2NV is a sonic crayon that can paint a whole rainbow.

Great River Electronics, 3056 East 65th St., Inver Grove Heights, MN 55076; 651/455-1846; fax 651/455-3224; www.greatriverelectronics.com. ■

BY EDDIE CILETTI

Beware the Odds of March

Tracking Eddie's Paper Trail

ILLUSTRATION MAE LAROBIS

Next month is the two-year anniversary of "Tech's Files" and, if much of your reading happens (like mine does) in the porcelain office, both your behind and mine are behind. What follows is a quick overview of past articles in case you missed 'em or wanna see the follow-up. Most are available online at www.mixonline.com (sans pix) and at www.tangible-technology.com, where, if you don't see what you're looking for, just ask.

IN THE BEGINNING

In April 2000, the very first "Tech's Files" was about DAT machines. By the fourth month of the following year, four more installments of "This Old Tape Machine" appeared. From generic tape tips to DTRS and ADAT specifics, more is covered here in *Mix* than in any other magazine. Be they rotating or stationary, heads endure miles of tape being dragged across them. Tape leaves its mark on guide flanges, capstan shafts and pinch rollers, all while removing material from head surfaces. I always emphasize the need to check the error *rate* and am no longer surprised to learn how often users ignore error *messages*.

DO HIGH-PERFORMANCE CABLES REALLY MAKE A DIFFERENCE?

In May 2000, I tweaked the electro-mechanical impedance of a tweeter using Ferrofluid, and, though not designed for it, the bird is still singing. Ferrofluid, a mix of magnetically conductive material combined with an application-specific fluid, improves efficiency and extends life expectancy by allowing heat transfer from voice coil to the magnet structure.

Far more challenging was my attempt at making impedance more tangible in 2001. My brain cells still burn from the experience; perhaps someone has since invented a cranium-specific cooling solution. The essence of the lesson was to explain the role impedance plays when interfacing gear. *If* a device with a source (output) impedance of 1,000 ohms or greater is coupled to a device with a bridging (high-impedance) input using a high-capacitance and/or extremely long cable, *then* the high-frequency response will suffer. Look for cables with low-capacitance-per-foot values. The typical maximum acceptable value should not exceed 50 pico-Farads (pF); good is 35 pF, and better is below 20 pF. Investigate before you buy.

Note: The 600-ohm transformer technology found in older gear expects input and output impedances to match, resulting in what is known as "Maximum Power Transfer." MPT is not the most efficient from a voltage perspective—the signal is cut in half—but it minimizes the effect of cable on high-frequency response.

Bottom line? Line- and mic-level gear that needs special cable is poorly designed unless your application is remote recording. For power amps and speakers, heavier-gauge cable compensates for greater distances between them.

JULY 2000: THE NATIVES ARE RESTLESS

Two hot topics in the middle of the summer—sound cards (2000) and guitar noises (2001). This time last year,

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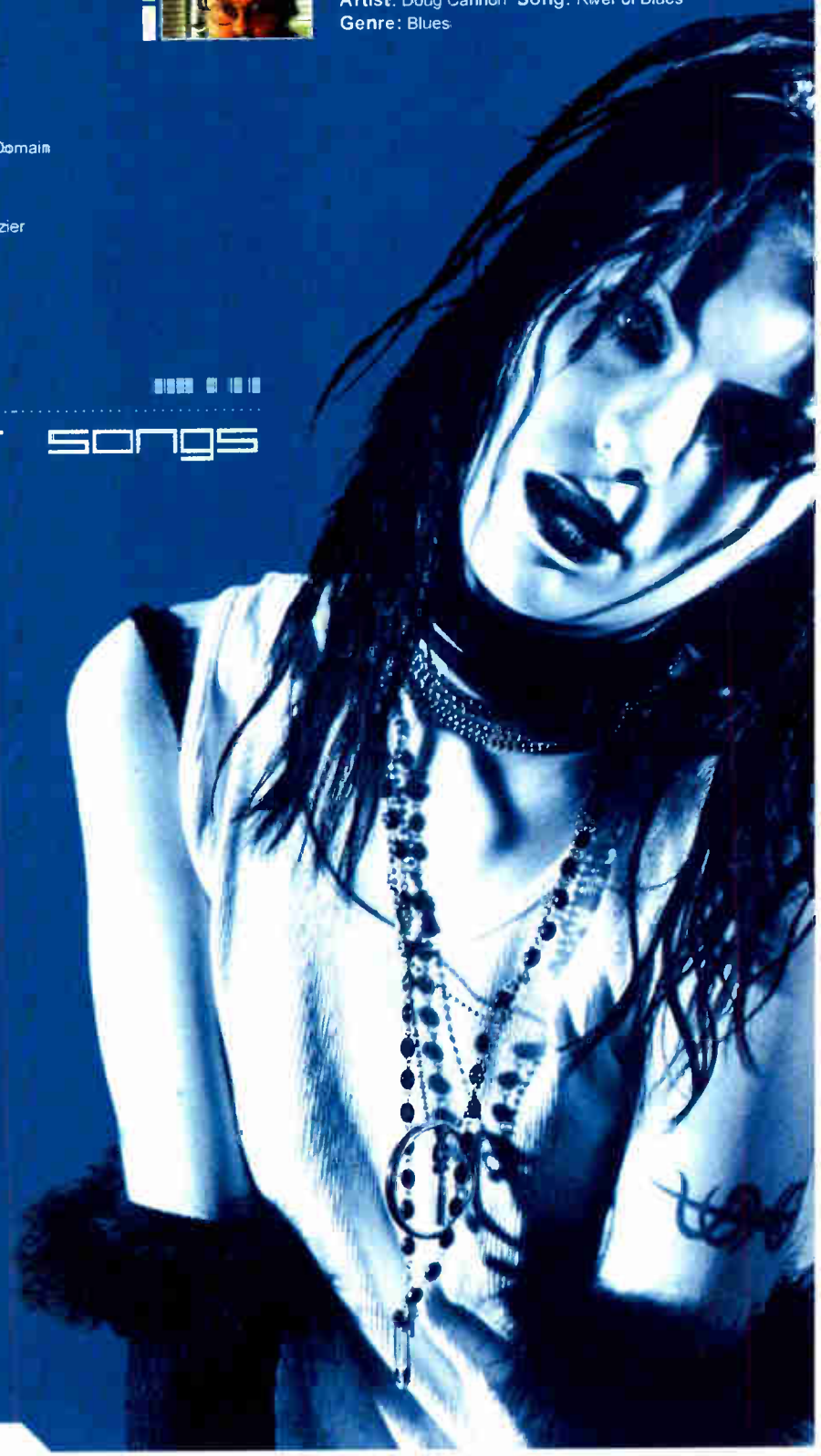

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as if they were reading my mind (or perhaps this column), Mackie Designs purchased SYDEC, the Belgian company that created the Soundscape workstation—my workstation. I often felt Soundscape was underappreciated and had suggested partnership to several American companies. While many products are still in diapers when brought to market, Mackie and its customers will benefit by embracing Soundscape's mature technology.

PARTNERS SUBLIME

An e-mailed press release has just arrived announcing another Mackie partnership, this time with Universal Audio, whose Powered Plug-Ins—DSP hardware with the most authentic digital versions of LA-2 and 1176 compressor/limiters, plus great EQ and reverb—will now be marketed and distributed by Mackie.

At the 2000 NAMM show, I nudged Bill Putnam to consider creating plug-in versions of his Universal Audio product line. Several conversations later, the lightbulb came on. The essence of any vintage analog device is the sum of its parts. This includes input and output transformers, their respective amplifiers, as well as the actual gain reduction and EQ circuitry. Such DSP-intensive emultation would never really fly as a multi-instance Native plug-in, but Universal's custom card *can* do justice to these exalted vintage products and your ears, while minimizing host processor overhead. (I've heard the preview, and I think you'll really like it! I hope future versions will include the isolated components so users can roll their own.)

Mackie's two "partnerships" indicate a trend back to dedicated hardware—a solution for Native workstation users who find that they are always pushing the envelope. The technology and the power are here now with options for everyone.

AUGUST-OCTOBER 2000: ANALOG TAPE MACHINES 101

Starting in August 2000, the analog tape machine series stretched across three issues, striking major chords with readers. It's not just about hot-rodded half-inch or 1-inch stereo machines, but the many pro and semi-pro formats sitting in dark corners getting occasional use. Will you be ready when a client walks in and is willing to spring for a reel of tape? And what tape to use? Do you know how to align?

Most machines originally designed for Ampex (Quantegy) 456 and 3M 250 should still be using that type of tape, now available as EMTEC 911. Older machines may not be capable of erasing super-high-output formulations such as Quantegy 996, GP9 and Emtec 900. Those machines that have the right stuff really should be re-tensioned for the newer formulations to avoid the risk of accelerated head wear.

A newly lapped head needs minimal tension, so make sure you're not wasting this valuable and precious resource.

Speaking of the Tartan Mining and Manufacturing Company from Minnesota, 3M tape machine parts are becoming quite scarce—I quickly sold my last pair of capstan belts via e-mail to one desperate user. For all vintage machines, keep a close eye on pinch rollers and other rubber parts that can get gummy with age. Clean *after* a session rather than before to remove tape chemicals that can degrade the rubber material while you sleep. Don't clean with just any "designated" rubber cleaner; use only "the pink stuff" sold by www.athan.com. (In a pinch, use Windex, Fantastic or Formula 409.)

NOVEMBER 2000: LA-4/RC4136 UPGRADE OPTIONS

Over a year ago, I experimented with upgrading the quad op amps in the UREI LA-

4A optical limiter. Not everything old is great, and the RC4136 amplifiers in that unit get cranky when hit with too much level. Thanks to Dan Kennedy at Great River, a plug-in IC retrofit kit is now available. UREI was kind enough to include sockets, so depending on your skill level, the first step to improving the signal path can be as simple as swapping chips—or review the original article online to see the expanded upgrade path options. Drop me an e-mail for more info or to let me know of other products that use the RC4136.

Also that month, the "maintenance and upgrades" series began with tips for locating bad electrolytic capacitors (via square waves and oscilloscope), plus op amp power and performance issues. At the time, Panasonic HFS and HFQ Series caps were the recommended replacements, but these have been discontinued and replaced by the FC Series. Readers recommended alternatives such as the Sanyo "Os-Con" and Elna "Starget" caps; *all* are better than many of the original factory parts.

There are many opinions about IC op amp sonics, but "fastest is bestest" may not always be the best strategy. Faster could mean higher current demands, not an option if the power supply lacks headroom—most just barely deliver the goods. The combination of speed and current can cause some circuit designs and/or PCB layouts to oscillate, either constantly or at the clipping point, potentially frying ears and tweeters. If you must drive a hot rod, then invest in an oscilloscope and/or a geek who knows how to use one. Don't be greedy.

MAY 2001: A BALANCING ACT

One recurring life theme is having the tenacity to follow a process all the way through to the end, no matter how daunting. Many of us are forced to own multiple hats—production, engineering and technical—but only one can be worn at any time. Knowing when it's time to take a break will help you regain perspective on an arrangement, a mix or finding the source of an intermittent. Patience is key. So is a clear head.

AUGUST 2001: DTRS TIPS & TRAPS

Tascam's DTRS format was most recently visited in August with step-by-step instructions to access the Error Rate display.

Recent stump-the-tech issues included an ancient DA-88 that I rebuilt, only to receive frustrated calls about intermittent high error rate. Yes, it happens to me too. The cause? After swapping heads and cards, the problem was traced to a pinched, shielded cable *between* the record amplifier and the DSP card. I lost money on the deal, but now know to check that cables will not get trapped between the SY-88 (sync) card and the momma board.

DECEMBER 2001: ADAT BONDAGE, MASTER LINKS

"ADATs that don't like to slave" is a burning issue from the Twin Cities to South Africa. If only one machine exhibits this problem, make it the master as a temp fix. While Alesis was restructuring this time last year, many service geeks became increasingly more reliant on each other. Marc Lewis of McCann Electronics in Louisiana compiled an e-mail list of service centers, and Paul Plotnick at Pro Digital in Philadelphia found that a hard reset fixes the problem. This is not a user-serviceable problem, but your local repair facility has the necessary tools.

Several readers e-mailed questions about the Alesis Masterlink "Power Tools" article. Use 5,400 rpm drives *only*! By the time you read this, I should finally have additional info posted at tangible-

technology.com about modifications that include an external drive with removeable caddy plus a multi-drive selector. The goal was to provide maximum flexibility for those who work on multiple projects, enabling each project to live on its own drive.

FEBRUARY 2002: TRUE COLORS

Last month, while writing about computer tweaks hard and soft, I simultaneously set up a new system for a neighbor. The PC was hardware-endowed, but software-light, shipping with only the Windows XP operating system. I popped in a DVD of The Corrs' *In Blue* featuring 5.1 surround mixes of their album plus a video of the single "Breathless." The first glitch should have been the clue; the video didn't play but its audio did. The Beatles' *Yellow Submarine* behaved as intended.

I downloaded a few odds and ends via cable modem to make sure the other peripherals were functional. Roxio has a 90-day trial version of CD Creator that, while quirky, allowed the CD-R to be tested. I'm not sure if the problem was hardware or software, but I kept getting errors that the recording media was flawed. It wasn't. Adobe's Photo Deluxe first complained about insufficient virtual memory—the PC was loaded with a half-gig of RAM, 80 and 20 GB of rotating storage. I eventually got everything to work. Once the PC was in its new home, the neighbors had not yet sprung for cable-modem service, so they loaded AOL only to find that a new XP-compatible download was necessary—two hours at 28.8 kbps!

XP has sexy multi-user capabilities, each with their own level of permissiveness. Basically, users can tweak their desktop, preferences and favorites while administrators can install and remove programs. Not all programs have "caught up" to XP. That should be no surprise. XP hasn't caught up to XP as exemplified by The Corrs' DVD on Microsoft's own Media Player. Adobe Photo Deluxe is another example. I installed it as an administrator, but it wouldn't run for any user without administrative privileges (which kinda defeats the purpose). Click on the icon, get a momentary hourglass and then nothing. Where's artificial intelligence when you need it?

While all of this may seem irrelevant to *Mix* readers, it's not. These are super-basic issues that should already have been resolved. Too often, we chase our tails trying to get audio applications to work correctly. We all await the next wave of enlightenment when operating systems and applications can self-diagnose with the ability to at least point us in the right direction. What's the moral of the story? Ask the software company what operating system is best for its application. Be sure to regularly check for updates. If you haven't yet done so, get high-speed Internet access via cable or DSL.

BUYER BE WHERE?

The most common issue reported by users and readers concerns used equipment purchases. For modular multitracks, no matter what the reported hours are, always factor in the head replacement cost (about $850), *then* compare the "adjusted deal price" to that of a new machine. Think about how you might sell a piece of gear—everyone wants to get top dollar for a minimum investment. If maintenance costs put new and used gear on nearly level ground, then the choice is easy. The additional knowledge will give you the leverage to negotiate a fair price. ■

For more links and tips, visit Eddie Ciletti at www.tangible-technology.com and see if he ever got around to posting pix of his second child.

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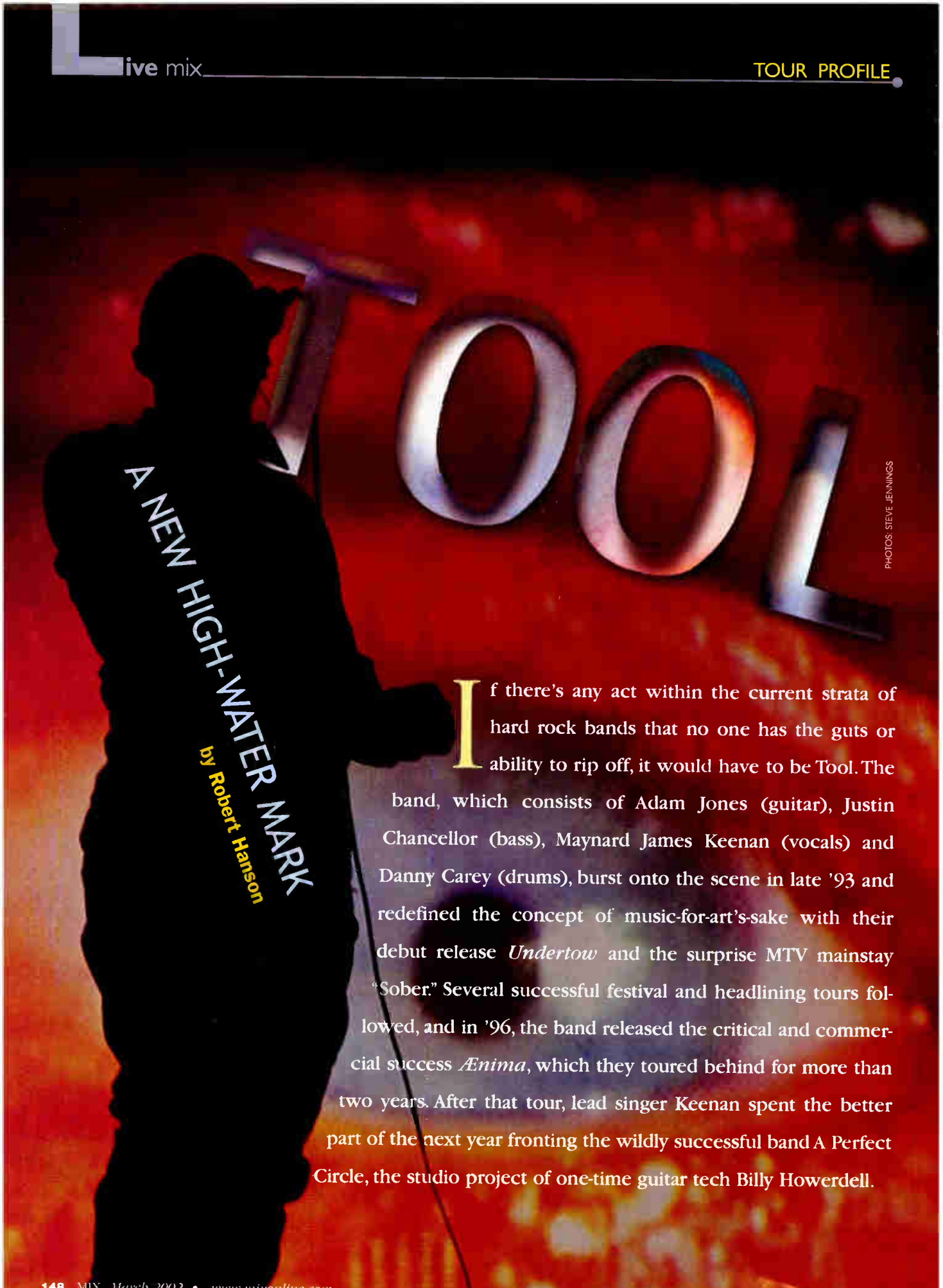

PHOTOS: STEVE JENNINGS

A NEW HIGH-WATER MARK

by Robert Hanson

If there's any act within the current strata of hard rock bands that no one has the guts or ability to rip off, it would have to be Tool. The band, which consists of Adam Jones (guitar), Justin Chancellor (bass), Maynard James Keenan (vocals) and Danny Carey (drums), burst onto the scene in late '93 and redefined the concept of music-for-art's-sake with their debut release *Undertow* and the surprise MTV mainstay "Sober." Several successful festival and headlining tours followed, and in '96, the band released the critical and commercial success *Ænima*, which they toured behind for more than two years. After that tour, lead singer Keenan spent the better part of the next year fronting the wildly successful band A Perfect Circle, the studio project of one-time guitar tech Billy Howerdell.

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Full Range Peak 133.3
Full Range Long Term 127.3
1100 Watts available to the components

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> 15-in vented LF; 8-in horn loaded MF; 1.4-in exit/75mm voice coil HF compression driver on constant directivity horn

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Maynard James Keenan opted to jettison the concept of a frontman by spending the duration of his performance silhouetted at the back of the stage.

Once Keenan's commitments with APC ended, Tool recorded and released their third and most successful full-length release, *Lateralus*, in the spring of 2001. The new album not only maintained the band's reputation for epic compositions, bizarre time signatures and apocalyptic imagery, but also found the band exploring new sounds, textures and instruments.

Last summer, Tool took to the road for the first time in more than four years, playing dates in Europe and committing to an extensive U.S. outing. The first half of the U.S. tour focused on a more intimate performance and only hit large theaters in major cities. The second leg, however, was an all-out arena juggernaut, selling out 40,000-plus venues across the country. Support acts included King Crimson and Tricky, and, on occasion, members of each band were brought onstage during Tool's set to play percussion or keyboards. *Mix* got a chance to see the band at the Shoreline Amphitheater in Mountain View, Calif. As had been the case at a number of outdoor venues, Tool's November show marked the end of the 2001 concert season at Shoreline.

CALCULATE WHAT YOU WILL

Tool is renowned for grinding, abrasive, multimedia-enhanced live shows, and this most recent outing raised the bar even higher. In addition to a state-of-the-art lighting rig, two projection screens and a huge flat-panel display were used as the main backdrop. The video elements were culled from the band's numerous stop-action videos in addition to some new computer-generated elements. The different components were mixed live each night, providing a totally new and unique visual collage for each song.

The band's stage positions were also somewhat unconventional; Keenan actually stood behind the backline, on a raised platform, in front of the flat-panel display. The reason for this was actually a practical one. Tool's legendary stage volume, and in particular Carey's drum kit, have always caused problems with Keenan's vocal mic. Consequently, Jones and Chancellor stood at the front of the stage, and Carey was positioned on a second riser. This setup kept bleed to an absolute minimum while preserving the volume and fidelity that the band requires.

FORTY-SIX AND 2

Monitor engineer Chris Gilpin, now a veteran of tours with both Tool and A Perfect Circle, was well-acquainted with the specific needs of each bandmember. For singer Keenan, who had used in-ear monitors (IEMs) on previous tours with both Tool and APC, Gilpin provided an IEM setup including Ultimate Ears UE5 custom molds and a Shure PSM700 wireless system. The other three bandmembers relied on an array of Showco Prism wedges, plus the sound of the backline equipment.

"The other guys talked about trying in-ears," Gilpin explains. "But to be honest, I can't really imagine a situation where they would be happy. And it's certainly not a criticism of anyone, but they are audio purists, and they definitely want it to sound a certain way. It's been a long road to get it to the point where they can say, 'Yes, that's the way I want it to sound.' It was a constant battle [through Europe] up until the point I stepped up to floor wedges and gave them all the headroom they needed."

Gilpin managed each bandmember's custom mix on a 48-input ATI Paragon. "The reason I like the ATI is that it's got gated comps on every channel," says Gilpin. "It's a very clean-sounding board. And I'd go with either this or a Midas just for the audio quality. It's clean and it's crisp, and it works well for in-ears. It's got a fantastic number of inputs and outputs as well, which is very useful."

The main vocal mic was an Audix OM-6. The bass and guitar rigs were miked with a combination of Shure SM57s and Sennheiser 409s, which provided some variety in the sounds and the ability to mix between the differing cabinets. The miking scheme for the drum kit comprised SM57s on snare and rack toms, AKG 414s on overheads, an AKG 460 on the ride cymbal, four RE-20s (two on floor toms and two within the kick drums) and two SM91s also on the kick drums.

Other stage inputs include four stereo pairs for the various synth/sampler rigs. Keenan's guitar, which he played on a handful of songs, was taken DI.

Gilpin routed the main vocal channel through an SPX 990 for chorus and a PCM70 for a short reverb. An SPX 990 was also used on bass. Gilpin notes that the majority of the effects were used solely for Keenan's IEMs.

"The biggest challenge on this [tour] is the fact that the stage is one of the loudest that I've ever been involved in," says Gilpin. "And I've done a few metal acts before, although these guys aren't really metal. On the one side, I'm having to turn everything up to the point where the guys are feeling it as well as hearing it. So there is definitely a threshold where it has to be *that* loud. And, at the same time, I'm trying to separate that from Maynard's vocal mic, because there is no way that anyone is going to put

Monitor engineer Chris Gilpin at the ATI Paragon.

out as much as a Marshall four-by-twelve with their voice. And, thankfully, they arranged it before I got involved, where Maynard was going to be on a riser, behind the backline, which actually keeps him in a very quiet pocket."

NO SECOND GUESSING

Where the stage engineers were confronted with high SPLs, a complicated monitoring scheme and a technically taxing show, a stripped down, "balls-to-the-wall" attitude set the tone at FOH. Hard panning of the drums, pitch correction and unnecessary outboard effects were purposely avoided. The idea was to color as little of the band's sound as possible and simply present an accurate approximation of the band's recorded material. For this leg of the tour, the main P.A. was a Showco Prism system, and FOH engineer Nobby, a veteran of tours with Bush and Rage Against the Machine, opted to use a Midas XL4 console, running 56 inputs. "The XL4 is just the best-sounding board; it's my personal choice," says Nobby.

FOH engineer Nobby at the Midas XL4

Nobby's outboard processing devices included two Summit TLA-100s and two BSS 901s, one of each patched across vocal and bass channels. Dynamic control of two guitar and two keyboard/sampler subgroups was managed by four dbx 160s, while Drawmer DS 201 gates were used on all the drum inputs except for the snare. Other items of note included two TC 2290s, an SPX 990, a REV 5, a KT DN360, an Eventide H3000 and four dbx 160As.

"It's kind of like a punk show, actually," Nobby explains. "We've moved some things around. We tried some valve processors in places. But for me, it was too warm. I was trying to keep the edge. So I actually swapped a few things out and put some dbx 160 compressors on there. And I'm [sure some people] wondered why I was swapping TLA and all this valve stuff for the dbx's. I think, if you're in the studio, they sound great. But I just wanted to keep it simple. There are some basic delays on the vocal and bit of modulation and Harmonizers and some distortion effects.

"I want to make it sound as close to the CD as possible," Nobby concludes. "Whenever I meet a band and start working with them, I always say, 'Look, are you happy with your CD?' Some people think that's a funny question, but a lot of bands say, 'Well, when we were finally finished, we wished that this or that was louder.' But when you get a band that loves their CD, that's perfect. I just listen to it for a few weeks before. And I go back and listen every couple of weeks because you can start to veer, and you just have to keep yourself in check." ■

Robert Hanson is an assistant editor at Mix.

BE PREPARED!

ROAD ESSENTIALS FOR YOUR GIG BAG

by Mark Frink

I'm always fascinated by the labor-saving and problem-solving devices each engineer chooses to bring in their personal kit, and I often borrow ideas and tricks from other road dogs. This short article lists some of the usual contents of my gig bag that I take to shows in the hope that, whatever the problem, I will have help close at hand.

My gig bag is the Chicago Case MFCart 22149, which meets airline carry-on size restrictions and has a telescoping handle and wheels. I always bring an Audio Control MP-200 preamp and an Audix TR-40 measurement mic to use with Smaart Live on my laptop. I also carry a Neutrik MiniRator MR-1 audio generator, a great signal source for setup and troubleshooting. And Check Point's "Inclinomatic" laser's built-in digital inclinometer with 10 memories makes calculating coverage angles a snap before the speakers are in the air.

A Shure SM58 with a switch provides a consistent tool for voicing the P.A. and driving nails. Then,

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a double-female XLR barrel makes it easy to patch it into the last snake line for talkback to the other console. It's also handy as VOG for stage managers and festival announcements. Rather than carrying favorite CDs for P.A. tuning and walk-in music, and risk leaving them behind, I burn copies and a spare of each. You can even put both P.A.-tuning and walk-in music on one disc.

"TAKE TWO AND GET SOME REST"

Ear plugs cut down on cabin noise in the plane and on the bus, making naps much easier. Noise is 24/7, and reducing exposure lowers stress and preserves hearing. Two-hundred pairs of yellow foamies cost $30. Anti-bacterial towelettes, alcohol wipes and hand cleaner help keep germs at bay. Getting sick is no fun, but when the artist gets sick you could be out of a job. Clean your hands, the vocal mics and ear molds thoroughly and often.

Ricola menthol eucalyptus throat lozenges help kill the germs that get shoved into mucus membranes on airplane flights when the cabin re-pressurizes on descent. They also help soothe singers' throats.

EmergenCee, a powdered high-dosage vitamin supplement that mixes with water, comes in several fruit flavors and makes a great load-out liquid with bottled water. The best electric toothbrush is from Sonicare; it keeps its charge for weeks, even in daily use.

ESSENTIAL PAPERWORK

If your credit card gets lost or stolen, unauthorized charges can usually be contested, but replacing a lost card mid-tour is a hassle. I keep a second, separate credit card just for travel expenses, which helps at tax time and keeps my personal account safe from abuse on the road. I also carry a spare driver's license. Because a photo ID is not only required to fly, but also often needed to get through security at gigs, I hole-punch it and keep it on my lanyard.

While you're at it, make a two-sided document with cell phone and e-mail contacts on one side and the truck pack list on the back. Laminate it and keep on your lanyard. Another useful document is a list of airline reservation and Frequent Flyer numbers to get all the mileage you deserve.

Get everyone on the same page—and off the cocktail napkin. A one-page hard copy of the stage plot and input list is essential. With all your show's sound info on a single sheet, you have a road map to hand out at the start of each gig.

A handful of FedEx airbills, envelopes and pouches, along with your company's account numbers, is worth carrying. And don't forget an empty microphone pouch to use as a float bag and to file all of your receipts—without them, you're throwing money away.

TOOLS AND SUPPLIES

Though their lithium batteries cost almost as much as a MiniMag, the Xenon bulb in the palm-sized Surefire is as bright as a quadruple D-cell Maglite, and makes a better tool for crisis situations or for performer walk-offs. Alternatively, the Streamlight Stinger rechargeable is almost twice as expensive, but can be recharged 1,000 times—you do the math.

One picture equals a thousand words and a digital camera allows you to create complete stage setup photo-documentation, simplifying instructions to local crews in any country. Similarly, photos of each row of the truck pack, taped to the trailer wall in sheet protectors, will help speed load-outs. Using neon gaffer tape for pack labels allows you to count and identify pieces quickly. The same brightly colored tape on every piece of gear helps with cartage services, airport runs and festival sort-outs. Similarly, an assortment of colored PVC tape helps color-code cables so that they can be plugged in without directions. I also carry both ¾- and ½-inch-wide artist's paper tape for marking up a new desk and labeling stage boxes. How often does the rental kit come without a drum key or a stick? Having these can keep line check from grinding to a halt.

SWAG

Sharpies for everyone. Last year, it was the oversized Super Sharpie. Sanford's new TwinTip Sharpie has the ultra-fine point on the back end. Get a box and pass 'em out so they don't steal yours. And how about some extra band CDs or t-shirts for greasing the way? A little swag in the right hands is worth its weight in gold. Where's mine?

Seriously, I'd like to know. In about 25 words, tell me your favorite cut for checking P.A.-tuning and why. For years, I've used "Constant Craving," and still do, for obvious reasons. Write to gigbag@markfrink.com and include your venue, company or artist, and your e-mail address, plus the favorite item from *your* gig bag. ■

Mark Frink is Mix's sound reinforcement editor.

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BILLY

Monitor engineer Bill E. Head (right) has been touring with both Idol's band and Incubus, switching back and forth as needed. Head's preferred monitor mixer is either a Midas XL4 or Midas Heritage 3000, which he uses to create a combination of in-ear and wedge mixes (Idol uses Ultimate Ears IEMs). Head always includes good quality audience mics in his in-ear mixes. "That adds a big depth to the overall mix," he notes. For effects, Head uses Smart compressors, Eventide Harmonizers and a Lexicon 91 reverb.

Bass/keyboard tech Tim Wright takes care of keyboardist Joe Simon and bassist Steve McGrath, whose instrument gets a Countryman DI and a Shure Beta 52 on the cabinet.

Billy Idol is back! On tour for most of the summer of 2001, Idol wound up the year with a three-night stand at The Roxy in Los Angeles and New Year's Eve shows in Las Vegas. Touring with a seasoned band that includes original guitarist Steve Stevens, Idol has been playing clubs, theaters, casinos and "one-offs," including a VH-1 special and Neil Young's annual Bridge School benefit (where Idol reportedly stole the show). Traveling light, with FOH and monitor gear supplied by Sound Image (Escondido, Calif.), the tour has been using a variety of P.A. systems, including JBL VerTec, Electro-Voice X-Array and L-Acoustic V-DOSC line arrays. *Mix* caught the second of two late-December shows at the House of Blues in Anaheim, Calif.

Guitar tech Mike Rush (below) looks after Steve Stevens' extensive array of guitars and gear. Stevens' effects racks include a Palmer PDI-03 speaker simulator, a Korg DRV-3000 digital effects processor and a TC Electronic D•Two multi-tap delay.

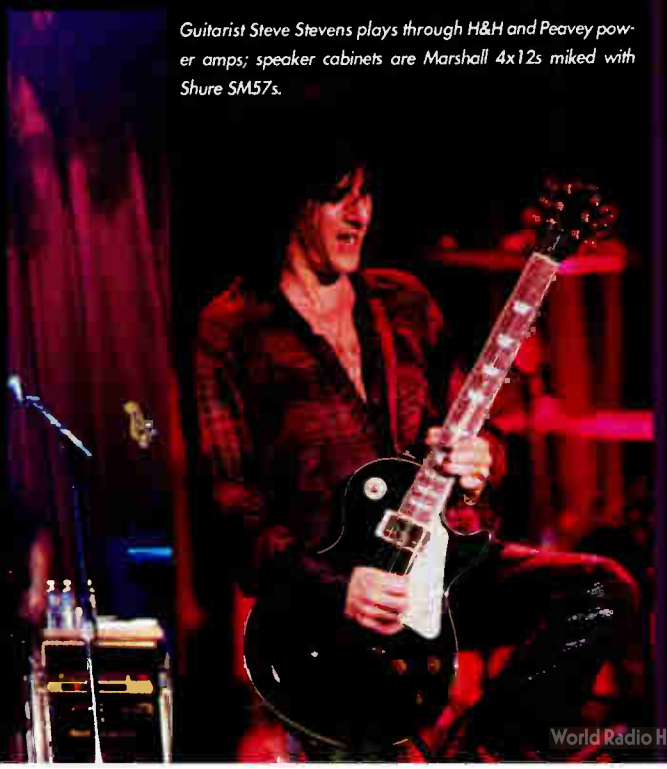
IDOL

PHOTOS AND TEXT BY STEVE JENNINGS

Drummer Brian Tichy uses Ultimate Ears IEMs and also has a "thumper" attached to his drum stool. "That way, we have no wedges on his drum riser," says drum tech Jimmy Robison (pictured above), who runs Drum Paradise in L.A. when not on tour. Loops and click tracks are replayed from a setup that includes an Akai MPC3000, with sound sources on Orb disks, and the newer Akai S5000 with an external Zip drive. Drum mics include a Shure Beta 52 for kick, an AKG C451 on the hi-hat, Beta 98s on the toms, a Beta 91 and KSM32s as overheads, and an SM81 on the ride cymbal.

FOH engineer Steve Spergl (shown left at the Midas XL4) uses a total of 47 inputs for the 35 stage inputs and a dozen effects returns. Spergl runs Idol's Shure SM58 wireless vocal mic through a Manley VoxBox and a BSS DPR-901II. "I'm also running his voice through a 31-band Klark Teknik DN 3600 graphic EQ, so I can, basically, have any EQ that I want," adds Spergl. "I am a huge fan of Shure mics—I know the sound and know how they will respond and what I need to do to them without much guessing." Spergl uses BSS gates and compressors and also patches a dbx 160SL compressor across the stereo mix bus: "It really tightens up the mix for me and I love the sound of it," he notes. Additional effects are supplied by three Yamaha SPX990 multi-effects processors, a Lexicon PCM 90 reverb and a TC Electronic TC 2290 dynamic digital delay. A Klark Teknik DN 6000 audio analyzer rounds out the outboard gear complement.

Guitarist Steve Stevens plays through H&H and Peavey power amps; speaker cabinets are Marshall 4x12s miked with Shure SM57s.



SENNHEISER TINY TRANSMITTER

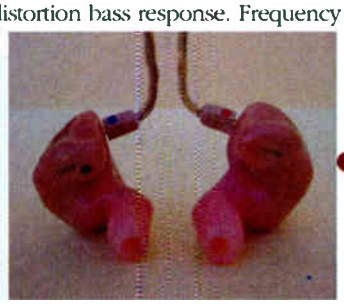
The SK 5012 from Sennheiser (www.sennheiserusa.com) is said to be the world's smallest professional bodypack transmitter. The newest member of Sennheiser's 5000 Series wireless products, the SK 5012 has a metal shell, measures 61x53x17 mm (about half the size of Sennheiser's SK 50) and delivers 30mW, regardless of battery status. The unit offers low self-noise and an improved noise-reduction system, multichannel capabilities and an easily programmable interface. Two AAA batteries provide up to seven hours of continuous operation. Price: $3,200.

QSC RMX AMP

QSC Audio Products Inc. (www.qscaudio.com) has introduced the RMX 1850HD, a 2-channel power amplifier that can produce 360 watts per channel at 8 ohms, 600 watts/channel at 4 ohms, and 900 watts/channel at 2 ohms. Housed in a two-rackspace chassis, the RMX 1850HD features a high-current, toroidal transformer, and each channel has independent user-defeatable clip limiters (with signal and clip LED indicators), and 50 and 30Hz filters. Other features include DC and thermal-overload protection, front-mount gain controls and a variable speed fan. I/Os include balanced ¼-inch TRS, XLR and barrier strip inputs, Neutrik Speakon and binding post outputs. The RMX 1850HD is 16 inches deep and weighs 45 pounds.

ULTIMATE EARS IEMS

Ultimate Ears Inc. (www.ultimateears.com) offers the UE-7 PRO™, the first triple-driver in-ear monitor (IEM). Designed for both live performance and studio work, the UE-7 PRO features a single high-frequency armature and dual low-frequency armatures in a custom ear mold with a soft flex canal, producing extended low-distortion bass response. Frequency response is 20-16k Hz, and the ear molds provide 26 dB of isolation from external noise. Available in flesh tone or in a variety of custom colors, the UE-7 PRO has a ⅛-inch connector and is compatible with all pro IEM systems.



FUNKTION-ONE RESOLUTION 5

The Resolution 5 from Funktion-One (www.funktion-one.com) is a three-way, active, fully horn-loaded loudspeaker designed for long-throw coverage. The Resolution 5 features 12-inch and 8-inch drivers and a pair of 1-inch voice coils, and frequency response is 114-18k Hz (+3 dB). Nominal dispersion is 25°x25°. Features include built-in flying hardware, minimal size and weight, and external dimensions that allow the Resolution 5 to pack five wide in a tractor trailer.

CROWN IQ FOR WINDOWS

Crown's (www.crownaudio.com) IQ for Windows software Version 5.0 is designed for configuring, controlling and monitoring Crown IQ Systems. The new software is available for free download at www.iqaudiosystems.com. Compatible with Windows 95, 98, ME, 2000/Professional and NT 4.+, Version 5.0 features fully indexed help screens to guide users through system setup and enhanced graphical tools for designing customized worksurfaces. New features of Version 5.0 include control and monitoring capabilities for the new IQ-PIP-USP2/CN CobraNet-compatible DSP amplifier module. Crown has also updated the IQ-INT 3 Interface and IQ-RPT 3 Repeater. Both revised models feature RJ-45 connectors, use only four IQ Bus loops and provide Loop Status LEDs.

PEAVEY RQ SERIES MIXERS

Peavey Electronics (www.peavey.com) has added to its line of RQ™ Series audio mixers. The 24-channel RQ 4324C and 32-channel 4332C models feature L/R and separate mono output buses, four assignable subs, six aux sends and two fully assignable stereo returns. Each of the four subgroup buses has built-in compressors with adjustable threshold and gain make-up controls. The four compressors are stereo-linkable in pairs, and may also be inserted across channels or output buses. Channels feature variable low-cut filters, sweep-mid EQ and phantom power. Two stereo "super channels" offer pad and polarity buttons and both XLR and ¼-inch line inputs, which can be used simultaneously. Both mixers have universal switching power supplies, and all outputs are XLR-balanced.

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"AIDA" IN PARIS

Staged for a sell-out crowd of 78,000 at the Stade de France in Paris, a recent production of Verdi's "Aida" featured a 130-piece choir, the 90-piece Radio France Philharmonic Orchestra and more than 550 extras. The truly international production was led by Canadian executive producer Francois Leroux and Dutch producer Peter Kroone, and featured a Bulgarian choir and ballet, a Romanian director, a French orchestra, an Italian conductor, a Canadian sound designer, a Polish choreographer, Russian and Spanish soloists, German camels and an American eagle.

Sound designer Guy Desroschers specified an L-Acoustics V-DOSC/dV-DOSC P.A. system, and Innovason and Soundcraft digital consoles for FOH. Stan Taal, a former recording engineer for Philips Classics, mixed the orchestra. Louis Buskens managed the challenge of the peripatetic choir by mounting a DPA 4061 miniature mic on the shoulder of every fourth choir member. A total of 36 DPA 4061s were allocated to the choir, with a further 16 4061s for the eight soloists. All the electronics were Sennheiser, and the soloists were also equipped with in-ear monitoring systems.

INSTALLATION NEWS

The recently completed $11 million renovation and modernization of The Joseph Meyerhoff Symphony Hall includes a new Meyer Sound loudspeaker system. The 2,443-seat concert facility has been the home of the Baltimore Symphony Orchestra since 1982, and, while the orchestra performs unamplified, the BSO wanted a new sound system for popular concerts and theatrical presentations. The new system includes four MSL-4s, three CQ-1s, three UPA-1Ps, a PSW-6 cardioid subwoofer and four UPM-2s, all controlled with Meyer's RMS software...Euphonix will provide two more System 5 consoles to the Latter-Day Saints Church for use in their Salt Lake City broadcast and post-production studios. LDS Church purchased a System 5-B last year and owns two Euphonix CS consoles...The first Soundcraft Series FOUR console sold in Canada recently went to the Oakville Centre for the Performing Arts, a 500-seat proscenium theater near Toronto. The 56-input Series FOUR (48 mono, four stereo channels) is part of a completely upgraded sound system, which includes BSS Soundweb processing, QSC PLX amplification and E-V X-Array loudspeakers.

TOURING NOTES

Midas Heritage 3000 and Midas Venice 320 consoles played a prominent role in a series of outdoor shows that the Pasadena Pops performed at this past summer at the Descanso Gardens in Pasadena, CA. The sound system for the 70-player symphony orchestra was designed by Pops consultant Larry Estrin and sound contractor Nelson Sound's Jack Haffamier...Earth, Wind & Fire's monitor engineer Mike Lionetti has been using an ATI Paragon II monitor console on the legendary R&B group's recent world tour. EW&F started the tour last August with a sound system from Cleveland's 8th Day Sound. "The Paragon II gives me the ability to have two different selections of pre-fader level and to use the channel outputs as post-fader level," says Lionetti, who is using the PII to simultaneously drive nine stereo in-ear mixes, six wedge mixes, a handful of sidefills and two Yamaha 900 effects sends. ■

MEYER RIG FOR POLISH WOODSTOCK

More popularly known as Polish Woodstock, the Woodstock Festival Station was attended by 300,000 people. Fotis Sound provided a Meyer Sound self-powered loudspeaker system, including 42 MSL-4s, 16 DS-4Ps, six CQ-2s and 36 650-P subwoofers. An additional 16 MSL-4s, eight DS-4Ps and 18 650-Ps were used per side for frontfill, while five MSL-4s and three CQ-2s per side provided a mono feed.

PHANTOM OF THE OPERA—IN KOREA

The latest production of Sir Andrew Lloyd Webber's *Phantom of the Opera*, which opened in Korea in December 2001, includes a new 31-input Cadac J-Type Live Production Console, equipped with six programmable group and three programmable auxiliary modules. *Phantom* has been produced in 99 cities in 18 countries and has been seen by a total audience of over 58 million; the Korean production is being staged by The Really Useful Group of Australia, in conjunction with local entertainment company Zemiro. The sound system is jointly supplied by Orbital Sound of London and the LG Arts Center.

BRIT ROW TESTS X-LINE AT MOBO

Sound contractor Britannia Row took the unusual step of evaluating a new Electro-Voice X-Line line array loudspeaker system at the sixth annual MOBO (Music Of Black Origin) Awards, the X-Line system's very first major UK gig. "We had a day less than is normally scheduled for load-in and set up," said sound designer and FOH engineer Derek Zieba. "Despite a 36-hour delay in getting our rigging points, we plugged it in, selected the presets on the controllers and fired it up; the system worked straight out of the box, and it sounded fantastic!"

BAG END FOR THE GARDEN

Madison Square Garden has installed 16 Bag End Quartz subwoofers as part of a new 180-speaker sound system. The new system was designed by Wrightson, Johnson, Hadden & Williams of Dallas, and installed by SPL Integrated Solutions.

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TENACIOUS D

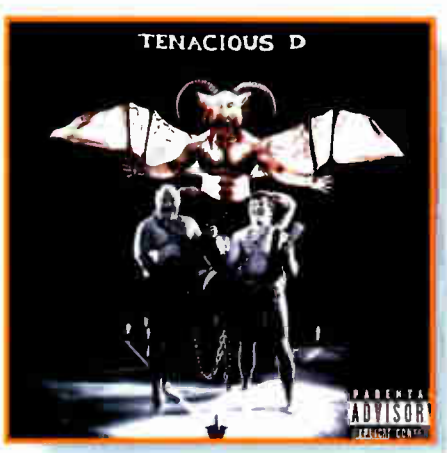
THEY WANT TO ROCK YOU HARD!

PHOTO: SEAN MURPHY

By Gaby Alter

Remember the days before gangster rap when, instead of flowing like Eminem or Biggie, it was every suburban teenage guy's dream to rock? Way back, before all the self-inflicted angst of grunge and the irony of New Wave, when singers sang about demons and dragons, when people banned music for its satanic content, when you made devil's horns with your hands to show exactly how hard the music was rocking you?

Tenacious D, the comedy band featuring actor/musicians Jack Black and Kyle Gass, remember that era well. Indeed, the L.A.-based duo appears on the cover of their album naked beneath a huge winged demon, their acoustic guitars covering their privates. One notices immediately, however, that these guys look nothing like your average rock stars: Both are in a heavier weight class, and the bald one, Gass, looks like he might be more at home in a den-



tist's office than an arena. And, wait a minute—an acoustic guitar duo playing hard rock?

It's true, though—these guys are funny *and* they rock. Black, whom you probably recognize as the record store clerk turned singer in *High Fidelity* and the lead in the Farrelly Brothers' *Shallow Hal*, and the deadpan Gass began impressing club audiences around L.A. in the late '90s with their unique mixture of musical spoofing and brilliant potty humor. Within a few years, they had earned a spot on HBO's *Mr. Show* comedy series. And just recently, they've reached the next level: a full-length album (*Tenacious D*) with top-flight production and musician credits that include the Foo Fighters' Dave Grohl and Phish's Page McConnell. To promote it, they've been touring nationally, on their own and as an opening act for Weezer.

Like the best rock parodists, Tenacious D have real musical skills to back up their humor. Jack Black, as he revealed in *High Fidelity* with his version of "Let's Get It On," has serious chops as a singer. His agile voice goes through different styles like a radio on search, skewering rock and metal singers both classic and new: a touch of David Bowie here, a bit of Robert Plant there, a Jethro Tull-like scat thrown in for hilarious effect. And Gass is no slouch on the guitar. Their music and lyrics meld Led Zeppelin-esque medieval nonsense ("every hundred thousand years or so/when the rain doth shine and the moon doth glow") with the lewdness of stand-up comedy (their sensitive ballad is titled "F— Her Gently".) The D spoof the bombast, ego and testosterone-charged spirit of rock as perfectly as Spinal Tap did in the '80s.

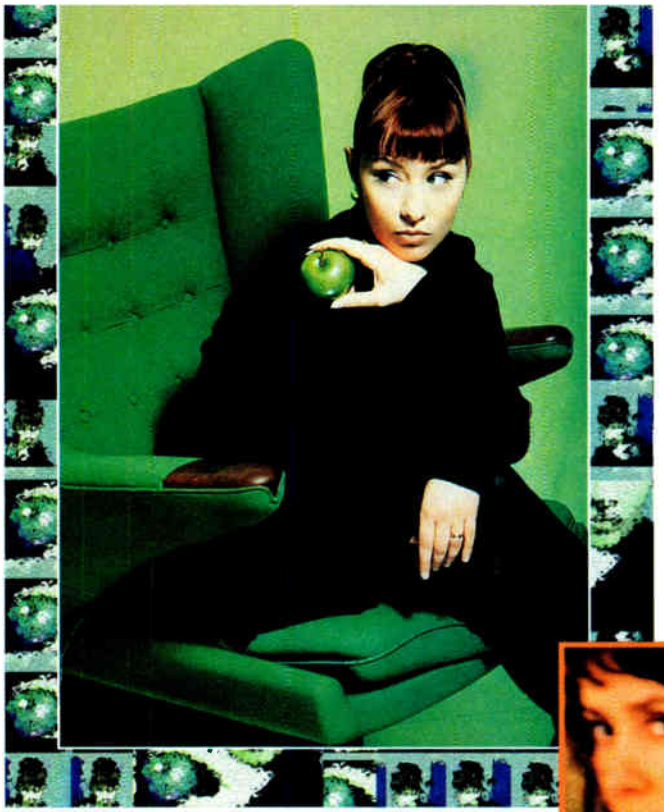
So what, exactly, is the D's creative process? And what is the recording technology that they used to create such songs as "Jesus Ranch" and "Exploding Brains"? "You want to know the secret?" Black asks. "You go down to Radio Shack, you get yourself a good tape recorder, top-of-the-line Radio Shack, I think it's called Optimus. You

—CONTINUED ON PAGE 168

SUZANNE VEGA

COLORS OF HER LIFE

By David John Farinella



Singer/songwriter Suzanne Vega is best known for her social commentary in the hit "Luka," bittersweet, poetic lyrics in "Marlene on the Wall," and the offbeat FM favorite "Left of Center." Over the course of a handful of albums and years of touring, she has established herself as a modern bohemian, who has blended folk with an urban, sometimes detached perspective. One might consider her a link between pioneers of modern folk such as Judy Collins, Joni Mitchell and Joan Baez, and younger artists like Liz Phair and Jewel.

For a few years in the late '90s, however, Vega maintained a fairly low profile, as she was deeply involved with personal matters. Some of these concerns form the heart of her sixth and latest CD, *Songs in Red and Gray*, which is arguably her most intimate album to date. "It's a very direct album and it's pretty personal, compared to some of the other albums I've made," Vega explains from her Manhattan apartment.

"There are no issues on this one that you can point to," she continues. "Really, it's more of a group of songs about looking back, remembering certain parts of my life, including my recent separation [from producer/keyboardist Mitchell Froom]. And how you get your life together after you've been through something like that. I'm hoping [the CD] will be comforting to someone

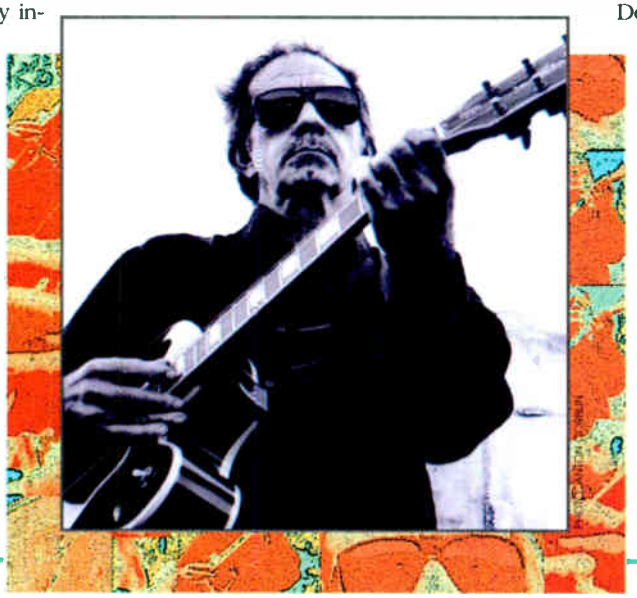
—CONTINUED ON PAGE 172

J.J. CALE

CAPTURING THE ELUSIVE ONE 'LIVE'

By Chris J. Walker

You may recall the advertising slogan that the late, great film director-turned-pitchman Orson Welles used to solemnly intone—"We'll sell no wine before its time." Well, that phrase could just as easily refer to the enigmatic, mellow-rocking singer/songwriter J.J. Cale's musical output. It's been more than five years since his last studio CD, *Guitar Man*, was released. And much to the dismay of his devoted fans and Virgin, his very patient record company, it may be quite a bit longer before he comes back with new material. But Cale fans do have something to cheer about these days—*J.J. Cale Live* on Back Porch Records, a subsidiary of Virgin. It's a collection that mixes some of Cale's best-known songs with lower-profile, highly personal numbers performed in different concert settings, ranging from small theaters to large concert halls in the U.S. and Europe. Cale is a notoriously reclusive musician who rarely does interviews, took 25 years before even attaching his pictures to any of his records, and performs only sporadically, so this is about as good as it can get for right now. The recorded appearances date from April 1990 to March 1996—not exactly recent tours, but representative nonetheless.



Despite Cale's laconic, laid-back manner, much of his live CD has a surprisingly rollicking feel to it. Still, "a lot of the selections are more acoustic-based," says John Wooler, senior VP of Virgin Records, from his office in Los Angeles. He does A&R for the associated Virgin labels and has worked with the publicity-shy artist since the early '90s. "It contains 'Magnolia,' which I personally like a lot, and things like that, which are different. Which is good because a lot of people who know the songs don't know

—CONTINUED ON PAGE 173

THE RIGHTEOUS BROTHERS' "YOU'VE LOST THAT LOVIN' FEELIN'"

by Dan Daley

Recorded in late 1964 and reaching Number One in both the U.S. and UK charts in February 1965, "You've Lost That Lovin' Feelin'" gave the Righteous Brothers an international hit that has endured to this day. Produced by Phil Spector at Gold Star Recording Studios in Hollywood, "You've Lost That Lovin' Feelin'" was also one of the most perfectly realized examples of the "Wall of Sound" technique that Spector had refined over the unprecedented string of hits he produced for his Philles label.

©MICHAEL OCHS ARCHIVES/VENICE, CA

The Righteous Brothers: Bill Medley (l) and Bobby Hatfield

Though Spector had started his career in L.A. (and, in fact, had recorded at Gold Star in 1958 as a member of the Teddy Bears), he had developed his reputation as a writer and producer in New York. While apprenticing with Lieber and Stoller, whose influence can be clearly heard in the Baion-style rhythms that Spector adopted for his own songs, he also co-wrote a number of hits, including The Drifters' classic "Spanish Harlem." Equally important, he met the soon-to-be-legendary Brill Building songwriting teams of Barry Mann/Cynthia Weil and Gerry Goffin/Carole King, and briefly landed an A&R gig with Ahmet Ertegun's Atlantic label. By mid-1961, he had started the Philles label and began producing the extraordinary run of hits that included such gems as "Da Doo Ron Ron" and "Then He Kissed Me" by The Crystals, and "Be My Baby" and "Walkin' in the Rain" by The Ronettes.

In mid-1964, Spector met the Righteous Brothers, a minor-league act who had a respectable run of hits on the Moonglow label, including "Little Latin Lupe Lu," which had reached Number 49. Though they sounded black, the Righteous Brothers were white. And the two 24-year-olds —Bill Medley and Bobby Hatfield—weren't brothers. Spector signed them to Philles and picked Barry Mann and Cynthia Weil to write a song specifically for the duo.

"I know Phil was very high on them, and he was very excited when the deal came through that got the group from Moonglow to his label," recalls Gold Star engineer Larry Levine, who had been engineering for Spector since The Crystals' "He's a Rebel" in 1963. "I remember how Mann and Weil reacted when they saw the studio for the first time, which was the same way everyone reacted. Everyone associated Phil and Gold Star [Studio A] with the 'Wall of Sound,' so they were expecting this *huge* studio. In reality, the studio dimensions were only about 19 by 24 feet, with a 13-foot ceiling. Only Studio B at Western was smaller than that in town. The huge sound of the records would lead everyone to imagine that the studio must be huge, too."

However, as Levine notes, Studio A's modest size contributed significantly to the Spector sound. "It meant that the musicians were all grouped closely together and that resulted in a lot of leakage, which was a big part of the 'Wall of Sound' effect, because you didn't really want to pick out any particular instrument from the others. They were all supposed to be part of 'the wall.' You had to really work hard to achieve separation in there, and you rarely did. But that's not what Phil wanted anyway."

One downside to Spector's studio method was that, once he had the musicians in place and the microphones set up, he kept them there, whether or not someone had to go the bathroom; Spector firmly believed that, once the sound had been achieved, any change in the room would upset the balance. "That was why Phil was so adamant about mono, and why he wanted to finish a session the same day," says Levine. "He believed that the only way to assure that the sound he wanted would remain intact was to fix all the pieces so they couldn't be moved. That included stereo—you could change the relationship between the channels; with mono, it was fixed for all time."

Typical for a Spector session, Gene Page's arrangement for "You've Lost That Lovin' Feelin'" called for a huge cast of musicians. Levine, who had been at Gold Star since 1952, two years after the studio had been opened by owners Dave Gold and Stan Ross, started the session seated at

the studio's 12-input console. Built by Dave Gold, the console featured rotary Bakelite faders and minimal broadband equalization. Top-end EQ settings were 3 kHz, 5 kHz and 10 kHz, and low-end settings were at 100 Hz and 60 Hz; each band could be varied in 3dB increments, from +12 to -9 dB. Because of the limited number of inputs, Levine had taken to ganging up to three microphones onto a single input for groups of instruments, such as multiple acoustic guitars (which were critical to the foundation of Spector's wall, though they are not easily heard on the records themselves). Levine also used a homemade sidecar mixer, which Gold had also constructed, and, by 1964, the studio had a Scully 8-track deck running 3M tape.

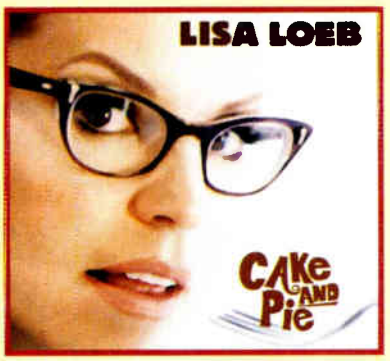
"We did it the same way we did most of the recordings," recalls Levine. "There were four acoustic guitars and Phil always started with them, getting them out in the studio and playing the figures. Then, after he had gotten them to the point where he wanted it to sound, we added the pianos. On this song, there were three of them. I could mike the acoustic guitars on three microphones all going into a single input; the pianos had to have separate inputs. Then we would add the basses—there were three of them: a Fender bass, an upright bass and a Dano bass [played by Carol Kaye]. Then came the horns, for which I used an RCA 44 on the two trumpets and the two trombones, and an E-V 15 on the three saxophones. The drums were always the last to go on. The drums got two tracks, though: I used an RCA 77 for the kick drum and a Neumann 67 on the overhead.

"All the while, as Phil was building the sound, I kept having to get sounds for each new layer of instruments, but at the same time try to keep a balance with each of the previous layers. Every time you raised the fader on another microphone, it changed the balance of the other microphones because it was such a small room. It was always quite a job doing a Phil Spector session, trying to keep everything in balance and have it match what Phil had inside his head."

The entire tracking process took all three hours of a regular session, a period that A.F. of M. Local 47 rules stipulated as sufficient for recording no more than four songs; because Spector used the entire three hours for one song, he never ran afoul of union rules. More to the point, Levine remembers, "Phil used the time to get the musicians tired. When they had run the song down a lot of times, they tended to become subservient to the overall sound and meld together better, instead of any one or two instruments sticking out when the musicians were fresh. By the time the sound was where he wanted it, the track would go down in two or three passes. There were all these psychological operations going on at every session. But Phil was always fair to the musicians, and they always got paid. And so did the studio, which was rare in

Cool Spins

The Mix Staff Members Pick Their Current Favorites



Lisa Loeb: *Cake and Pie* (A&M)

It's been about four years since Lisa Loeb's last album, *Firecracker*, came out, and if the lyrics on her new one are any indication of the life she's been living during the interim, it would appear that she's spent a lot of time in rocky relationships. This is bad for her (I suppose) but good for us, because she has a real gift for describing romantic disillusionment and misery; though her style remains a sort of wispy folk-pop, what she's describing is definitely *the blues*. Musically, this is her strongest album to date: Many of the hooks are memorable, the arrangements veer from surprisingly forceful pop-rock to more contemplative folk spaces, plus there is a judicious use of strings on two tracks; it's a nice combination of styles pulled together by Loeb's breathy vocals and appealing persona. This time out, she's collaborated with an interesting variety of musicians, songwriters and producers, including Randy Scruggs, Dweezil Zappa and the ubiquitous (but undeniably talented) Glen Ballard. With many of her songs, I feel like I'm looking over the shoulder of someone writing in a journal, or eavesdropping on a telephone call; her lyrics have that sort of casual, conversational quality, and that's precisely why she has been able to connect with so many people. In general, I prefer the somewhat softer first half of the album to the more rockin' second half, but then she saves the best for last: "She's Falling Apart" is a spare and frightening depiction of a woman's mental dissolution; one of her best songs ever.

Producers: Lisa Loeb, Peter Collins, Randy Scruggs, Dweezil Zappa. Tracking Engineers: Michael C. Ross, Dweezil Zappa, David Reitzas, Gary Burr. Mixing: Bob Clearmountain, Jack Joseph Puig, Mike Shipley. Studios: The Village, Royaltone, Ocean Way, Conway, Bitch Stevenson Sound, Extasy, Record One (all in the L.A. area). Mastering: Ted Jensen/Sterling Sound —*Blair Jackson*

Tosca: *The Different Tastes of Honey* (!K7 Records)

Richard Dorfmeister has spent years crafting and mixing manic, progressive house anthems as half of the internationally renowned Kruder & Dorfmeister. Back in '96, Dorfmeister teamed up with longtime friend Rupert Huber, and the two put out a pair of albums (*Opera* in '96 and *Suzuki* in '99) as Tosca. Where Kruder & Dorfmeister were very much the life of the party, turning out the kind of frenzied grooves that often send the "chemically enhanced" to the ER, Tosca, with their mellowed tempos, bottom-octave bass grooves and sly arrangements, have always provided the perfect soundtrack for that morning-after hangover or that uneasy 7 a.m. make-out session with a stranger. Slick, sleazy and catchy, Tosca's third full-length album, *The Different Tastes of Honey*, feels like equal parts *Urban Cowboy* and *Sex Lies & Video Tape*, set to strip-club-tempo break beat. The album still has

—CONTINUED ON PAGE 174

those days. But Phil's attitude was that the studio is where you lived, so you made sure you paid the rent on time."

The lead vocals were done relatively quickly, with Medley and Hatfield singing into separate RCA 77 microphones. The background singers—mainly the vocal group The Blossoms, though Levine remembers that a few passersbys were also pressed into duty—sang into an RCA 44.

The lead vocals, however, had their own little back story. According to Levine, Bill Medley had felt from the beginning that the recording was too focused on his voice, at the expense of his partner, Bobby Hatfield, who sang mostly on the choruses. Medley was ready to scratch the song altogether, a position he maintained even after the song was done. "I remember sitting in the control room during a playback and telling Bill how this was going to be a big hit record," says Levine. "And even then he felt that Bobby's part wasn't big enough."

Spector's opinion obviously prevailed. But the producer was having one of his own rare moments of self-doubt. Up to this point, Spector's hits had all featured a huge and unwavering back beat. "He was very concerned that this was going to kill the record," says Levine. "It was literally the first time he had ever done a record like this. But on this song, there was just no place to put a big back beat. He was concerned that he was going someplace that the public wouldn't follow him. He knew the song was good and the sound was there, but he wasn't sure about the lack of a big drum part. So he would bring in people whose opinions he respected and asked them what they thought."

Whatever doubts Spector had, he overcame. With the vocals done on the second day of recording, Levine set up to mix—to mono, of course—to an Ampex 350 deck running at 15 ips. This was his favorite part of the process, because Spector would leave him to do each mix on his own, stopping by in between to listen and give directions. "It was a good way to work," says Levine. "I didn't have to mix with someone constantly looking over my shoulder, and Phil would get to hear it fresh each time he came in."

There was only rudimentary signal processing, but what there was was unique. Gold Star had two 2x3-foot cement-lined echo chambers located behind the control room wall in a dark void, which Levine says he found "creepy." The reverb setup was simple—an 8-inch speaker and a cheap ribbon microphone. "But when you heard yourself talk while your head was in there, you knew just how good those chambers were," Levine recalls. The reverb on "You've Lost That Lovin' Feelin'" was applied with a broad brush, even on the tracking session, and more was added on the lead vocals during the mix. Some fast tape-slap was also added to several percussion instruments during tracking. There was no compression at all until the track was mastered, at Gold Star, when a Dave Gold-designed soft knee-type compressor was used.

With mixing complete, there remained one unresolved issue. And in this instance, Levine proved how helpful a savvy engineer can be. At nearly four minutes long, "You've Lost That Lovin' Feelin'" was a lengthy single by radio standards of the era. "It was running 3:50, and Phil was really worried that no DJs would play it," Levine recalls. "So I suggested that we mark the record 3:05, and if anyone asked we could say it was a typo. Phil went along with that. We knew the programmers would figure it out after they listened to it. But at least it made sure that it got played once. It's a good thing, too."

Despite its extreme length, the record was an immediate hit in the U.S., though it faced early competition in Britain from a cover version by Cilla Black, the former Cavern Club coat check girl who'd been groomed for stardom by Beatles manager Brian Epstein. However, Spector's many fans in the UK included Rolling Stones manager Andrew Loog Oldham, who placed his own ads in the British music papers to promote the original version. "Already in the American Top 10, this is Spector's greatest production, the last word in Tomorrow's sound Today, exposing the overall mediocrity of the Music Industry," wrote Oldham. And the Righteous Brothers record duly leapfrogged Black's release to the top of the charts.

The Righteous Brothers had a few more hits with Spector, including "Unchained Melody," "Ebb Tide" and "Just Once in My Life," and they were regulars on the hip mid-'60s TV show *Shindig*. But by 1968, they had broken up; Medley went solo, while Hatfield kept the Righteous Brothers name and recruited a singer named Jimmy Walker. Medley and Hatfield have reunited a number of times since, but Medley has enjoyed more success as a solo artist, even hitting Number One in 1987 with "(I've Had) The Time of My Life," a duet with Jennifer Warnes from the film *Dirty Dancing*.

Though the Righteous Brothers' version of "You've Lost That Lovin' Feelin'" is definitive, it has been covered by hundreds of artists, including Elvis Presley, Tom Jones, Dionne Warwick, Pat Boone, Brian Wilson and Neil Diamond. Hall & Oates also had a hit with the song in 1980, and the original version appeared in a key scene in the Tom Cruise-starring 1985 film *Top Gun*.

Many would argue that "You've Lost That Lovin' Feelin'" is one of the greatest 45s of all time, yet it signaled the end of Spector's astonishing run as the undisputed King of Pop. His next major production, Ike & Tina Turner's "River Deep, Mountain High," was a commercial flop in the U.S. and Spector abruptly quit the business—at the age of 25. Though he later returned from his self-imposed exile to remix The Beatles' *Let It Be* album (much to the annoyance of critics) and produced singles and albums for John Lennon, George Harrison, Dion, Leonard Cohen and The Ramones, Spector never again dominated the charts as he had from 1961 to 1965 with his "little symphonies for the kids." ■

TENACIOUS D

FROM PAGE 164

gotta get the one that records in stereo, and not the little guy. Get the big one. You press Record, and you just do whatever comes to your damn head, and you do it for hours. And it's gonna be all crappy, except for about one minute, maybe 30 seconds. And you stretch that 30 seconds into a song. And you know what you've got? I don't know. But that's our method—we just gave it out for free."

For their major-label debut, however, the D needed more firepower than Radio Shack could provide. To produce the album, they hooked up with John King and Mike Simpson, aka the Dust Brothers, famed for producing such oddball sonic masterpieces as Beck's *Odelay* and the Beastie Boys' *Paul's Boutique*. "I had been a fan of the D for many years," says Simpson. "I was doing A&R at Dreamworks, and I thought it would be a great idea to do a record with those guys. I wasn't so sure about how well a comedy record would do, but I just felt that based on the shows I'd been seeing, these guys were amazing songwriters, singers and

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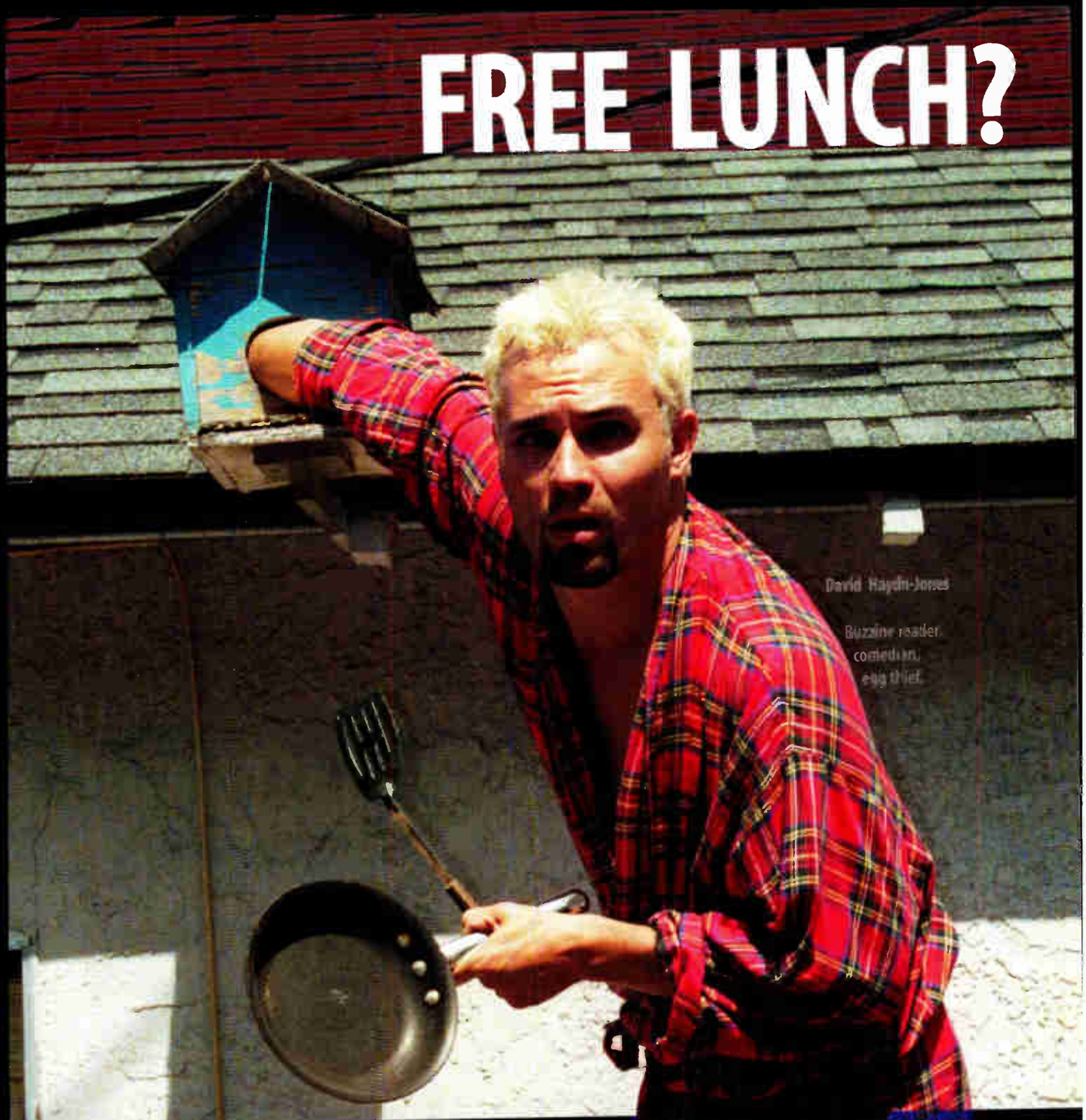

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performers, and I thought they could probably make a serious rock record."

And what did the D think of collaborating with the producers behind "Devil's Haircut"? "We had the best guys in the business working on this friggin' album," Black says. "They could make Shakira sound good. They could get Shaq O'Neill back on the charts."

"They were kind of egomaniacal taskmasters," Gass deadpans. "No, they were a lot of fun to work with. I've felt like we'd found our *dopplegangers*. John is kind of a Pro Tools wizard. He has a munchkin, elfin quality."

For the album, the D decided to turn their acoustic rock parody into a full rock band sound, with drums, bass, synthesizer, electric guitars and the occasional strings. "We knew that there were a lot of bootlegs around that were just our live show," says Gass. "So we thought it would be fun to blow it up a little bit in the studio. And the Dust Brothers really encouraged adding some stuff."

"I suggested that we create a sort of supergroup," Simpson says. "I said to the D, 'You know, you guys have got a lot of fans out there, especially rock star fans, and I'm sure they'd be psyched to play on the record.' And they were like, 'Really? Do you think?' And I was like, 'Yeah.' And they said, 'Well, Dave Grohl asked us to be in his video.' And I said, 'Well, there you go, you've got a drummer.'" Initially, it was unclear if Grohl had time for more than a guest appearance on the album. But he exceeded all expectations by playing drums throughout, as well as doing some electric guitar overdubs.

The recording began with a two-day session at Neil Diamond's studio in L.A. They got the hook-up for the studio because Diamond had just appeared with Black in the film *Saving Silverman*, in which Black plays a Neil Diamond cover singer. "Diamond claims it was the Liberty Records studio," King says. "It's a really old place."

"It's like a '70s living room," Black remarks. "Lots of brown shag carpets, lots of big posters of Neil. It was groovy; had a good vibe to it."

"Neil was there one day," Gass adds. "He had us work on a song that he was writing, and pretended that we were helping him, and we weren't at all."

"I tried to lay down some harmony tracks," Black winces. "Whoo-wee! Ixnayed!"

King and Simpson had the D play through their set live in the studio, with Grohl and bassist Steve MacDonald accompanying them. They used a minimal setup, as they were going only for drum takes. The drums were miked with a Neumann FET 47 on the kick, a Shure 57 on the snare and two Manley Reference Golds as overheads. They recorded MacDonald's signal direct through a Bass Pod Pro to avoid leakage.

"We had sent Dave and Steve CDs of the songs," John King says. "Dave came in and we worked for one and a half days. In the equivalent of one day of studio time, Dave played drums on 20 songs. And it was fully improvised. They'd run through it, and he'd come up with something, and we'd do anywhere from one to five takes. I took all the drums, loaded them off analog 24-track, pulled them into Pro Tools and edited together a comp of different takes he had done—all my favorite drums and fills, things to accentuate the emotion and feeling of the song, and rock the most. We didn't use a click track either, so it was fully human time, human rhythm."

> These guys are "on" all the time. Every day, we got our own private Tenacious D show.
> —Mike Simpson

What was it like for the D, who had never had a backing band, to work with the former Nirvana-ite? "Shredmaster 5000," Black says of Grohl. "That's the first thing that comes to mind."

Once they had Grohl's drum tracks, the Dust Brothers returned to their own studio to complete the album. Nicknamed "The Boat," the studio was built for use as an organ chamber in the '40s. "We purchased it a couple of years ago and renovated it," King says. "It's got a great big live room, nice iso booth. In our main control room, we have a vintage Neve full of 1073 and 1066 mic pre EQs. We've been told that it was one of George Martin's Neve boards from Air Studios in London, from the '70s."

In The Boat, the D proceeded to kick out the jams some more, including the songs "Keilbasa," which features some of the best phallo-comic metaphors since Spinal Tap's "Big Buns" ("I check my dipstick/You need lubrication, honey"), and "Karate," which features conflict-resolution Jack Black style ("You broke the rules, now I pull out all your pubic hair").

"He's a great vocalist," King says of Black. "The thing about Jack is, he goes through so many vocal styles. That can be a little hard on his voice. He tended to want to kick out five takes max. I wouldn't do a lot of warm-up, or spend a lot of time getting the mic sound. I wanted to capture his voice on that second take, when it was just perfect." King used a vintage Neumann U47 for all of Black's vocals.

The album was actually mixed twice, once by the Dust Brothers and a second time by Ken Andrews, both using an SSL board. "When we went in initially, Jack and Kyle were really concerned that they could hear their acoustics," King says. "So we did the mixes like that, which was tough, because for rock songs, usually the acoustic is not the most dominant instrument. I really liked the sound of them. It's not pumpin' rock, but it's like this California rock, pre-Eagles era, early '70s, when there was a lot of folksy elements, and it sounds like nothing else out there." However, Andrews' mixes, which ended up on the album, have a more traditional rock sound, emphasizing the electric guitars, bass and drums. And in the words of one D song, they truly "rock your socks off." Not bad for a couple of guys who, by their own admission, don't play electric guitar.

"Sound will come out of the amp, but it won't be any good sounds," Black says.

"I'm gonna work on that this summer, and then in the fall, I'm gonna take some classes," Gass adds.

"With who?" Black asks.

"Uh, I don't know. Yngwie. Or Joe Satriani."

"Satriani actually teaches. I don't know if Yngwie does."

"Well, I just watch. I'm gonna get some videos, check 'em out at home."

Whether or not they ever learn to play electric, the D will never stop rocking—or amusing. "These guys are 'on' all the time," Simpson says. "Every day we got our own private Tenacious D show."

Do the D have any final words of rock wisdom to impart to our readers? "For those about to mix," Black sings, Angus Young-style, into my phone's receiver, "we salute you!" ■

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SUZANNE VEGA

FROM PAGE 165

who's been through a trauma or something."

Naturally, Vega is very proud of the new release and feels that it showcases her songwriting development and maturity. She thinks the song called "Penitent" is the most poignant of the 13-song collection. "I'm just always in the mood to sing that one," she says. "I guess it sums up the stance of the whole album. When you hear that, you can say, 'Okay, that's the mood she was in when she was writing this album.' But [the new CD] actually is a good mixture of light and dark."

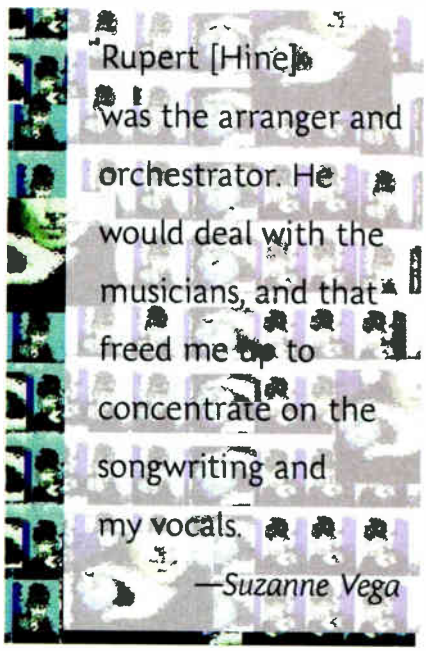
The other notable aspect of Vega's latest project is its acoustic orientation. Some would say it's a back-to-basics approach that recaptures her folky Greenwich Village days in the early '80s. Without question, this record is quite a contrast sonically to her previous two highly produced CDs, *99.9° F* and *Nine Objects of Desire*, both done with her acclaimed ex-husband. Vega notes, "I always liked working with him; I don't regret that part at all.

"But I thought that it would be a mistake to either avoid what I had done [with Froom] or try to re-create it. So, we just kind of stepped aside from that whole issue. I felt that all I really wanted to do was get back to basics. I had been doing some shows where it was me just playing acoustic guitar with my bass player, and I was really enjoying the intimacy and immediateness of that. So I said, 'Let's have this be an acoustic-based album.' But I still wanted it to be fully produced and realized, unlike a 'live' or 'roots' CD."

British producer Rupert Hine, a singer/songwriter in his own right with 11 solo CDs under his belt, turned Vega's desires into a tangible recording. He, too, was going through a separation and divorce during the sessions, and had done two preliminary tracks as a demo with her three months before they started working together full-tilt. Vega was impressed and tapped him to produce the whole album. And although he's produced dozens of records, ranging from the hard rocking Rush to pop/soul diva Tina Turner, Hine considers his work with singer/songwriters to be his true niche. "[Suzanne] really wanted to bring the acoustic guitar back so that she could play all the songs on her own, if need be," he says from the Jim Henson Studios [formerly the site of A&M Records] in Los Angeles, where he was preparing for a new project.

Besides the acoustic orientation, there was one additional condition that Vega sought, which affected the whole recording process: She didn't want the sessions to consume and upset her regular life, especially pertaining to Ruby, her young daughter. "We set up a way of working so that she could appear at a specific time every day," says the producer. "That worked out to be about two to three in the afternoon, to about five or six in the evening. It was the first time I had ever done anything like that.

"But she was absolutely thrilled with it, because she was able to keep her home life together. I think it's one of the reasons she worked so well on this album. It somehow made her so much more real in every way, and her vocals were natural. In the past it was a struggle, from what I gathered, and she had a hard time getting songs together for an album. But here she was so prolific, even in the last week of recording."



Vega, who has little interest in the technical aspects of recording, confirms this. "Usually I'm in there all day, every day, which can become overwhelming. *Days of Open Hand* took me a year to do, and it was in the house that [she and then-boyfriend, keyboardist/producer Anton Sanko] lived in at the time. It wreaked havoc on our relationship. The other thing is that I don't care for home studios. I would rather go out to another studio, where there's a manager and you get snacks and stuff," she laughs. "I like it if there's someone else looking after the fruit bowl and they have a nice comfortable sofa."

Looking Glass Studio in midtown Manhattan, where the album was both recorded and mixed, was not that far from her home. Hine had worked at the studio previously for a couple of smaller projects and recommended it. Equipment there included a 48-channel Pro Tools system, an SSL board, a Neve BCM 10x2 sidecar mixer, and various outboard pieces and plug-ins. The owner of the facility is none other than classical/avant-garde composer Philip Glass, who, as fate would have it, arranged "Fifty-Fifty Chance" on Vega's third CD.

"It was pretty great, and I saw [Glass] a couple of times," Vega says. "It's beautiful, with a lot of wood and long hallways. One of the reasons Rupert wanted to work there was because it actually had this huge window in the control room. You could see outside, and we saw a lot of snowstorms, and whatever weather was going on. I was very happy working there."

Engineer Stephen Tayler, another Englishman who has worked with Hine for more than 20 years, was in accord with the studio selection. "It's got a very special atmosphere, which I would describe as being more 'arty' than 'rock 'n' roll,'" he says by phone from Rome, where he is working on a project with Renato Zero, one of Italy's top pop/rock stars. "It was a refreshing change to be in an environment that really affected the process. We had a real stable system and a wonderful assistant, Hector Castillo, who's a very computer-savvy individual. All in all, being there was a real pleasure—it didn't feel like going to work at all."

Because the participating parties were there from the end of October 2000 to the beginning of February 2001, it was important to be in a pleasant environment. Before Vega's arrival, Hine, who's had no formal training as an arranger but is quite adept at it, and Tayler would go through files to work out rhythm and string sections. Once Vega arrived, she laid down guitar and vocal tracks, using a Neumann U47 mic. Soon afterward, the producer would arrange her performances on his Apple G-3 PowerBook equipped with a Digigram audio card, which he's been using for several years.

After Vega departed each evening, various session musicians came in to lay down backing tracks. Her bassist of several years, Mike Visceglia, and touring guitarist Gerry Leonard were on most of the

CD. Other members of the supporting cast included Nick Pugh, a programmer who's done work with Tricky and Massive Attack, backup singers Pamela Sue Man and Elizabeth Taubman, and drummers Jerry Bellerose and Doug Yowell. "It was interesting recording Bellerose, who plays on two or three songs," Tayler remembers, "because he plays on the smallest kit I've ever seen. And sometimes he's extremely quiet. He wears shakers on his ankles, sometimes plays the snare with his fingers, and he has a little tiny cymbal. It took unusual miking that was extremely close to get interesting sounds from him."

Hine, who considers the project one of his most fulfilling from a personal standpoint, comments about its technical aspects: "This is the first album I've done that was recorded completely on hard disk/computer, outside of the early sessions. Those were done on analog tape. But the rest of it never saw any tape of any kind. It was a combination of the Logic Audio on my computer and the studio's system. I have a little digital keyboard on my computer, so I could basically sit and arrange her songs anywhere. All the basic arrangements were done in that PowerBook."

Tayler also did extensive work using MOTU "for some of the more quirky and specific editing and manipulation," he says. "After I was finished with my various tasks, I would pass it all back to Pro Tools." Much like his producing partner, Tayler took his system to his apartment in the evening. "I spent many a happy evening editing vocals and unusual rhythmic elements," he says; he and Hine often swapped files to do what they called "homework."

Hine and Tayler both appreciated the free reign they were given on the project, and the producer, in particular, came away very impressed with Vega, as a person and as an artist. "Out of the over 100 albums I've produced, I would say unequivocally that Suzanne is by far one of the most outstanding writers of words," he says. "She's very eloquent, expressive and able to say so much with so few words—that's really the art. To me, she's right up there with Leonard Cohen at the pinnacle of writers.

"If you're working on every aspect of the record, such as arranging and producing, then I really do appreciate it when I'm given space to work on my own. And that [Vega] was very willing to do. Her objectivity when she did come in was immensely useful."

Vega also enjoyed the process, noting, "I would go in and play whatever I had for Rupert. It was usually a skeleton of an idea; sometimes it would be completely finished. Most of the time I was trying to get them finished before I went in. I would play to a click track in a booth and he would use that as a basis of a song. Eventually, I would go in, overdub the vocal and guitar part again after he would sketch out bass parts, rhythm tracks or orchestration.

"Sometimes he'd have live musicians come in and play with me. But more often, it was just me doing live vocals with guitar. So it was very easy on my part, all I had to do was play to that click track. Basically, we could layer up or down, have all kinds of experimental things to work with, and come out with exactly what we wanted. It was a very free way of working and very clear. Rupert was the arranger and orchestrator. So he would deal with the musicians, and that freed me up to concentrate on the songwriting and my vocals.

"Since I know more about what I want to do than when I was starting out, recording has become easier. I delegate what I don't want to do. Also, when I was first starting out, I was very dependent on my producers. And I would stay in the vocal booth till they said I could come out. Now I don't do that. I come out and say, 'Let me listen to this,' and make the choices as to what I like and don't like.

"Ninety-nine times out of 100, Rupert hit it perfectly," Vega continues. "We had a couple times when I said 'I don't know about this direction; maybe we need to pick up the tempo or maybe this is just too mournful.' And Rupert took direction real well and came up with some beautiful things that surpassed my wildest expectations. That's what happened with 'Solitaire' and also 'Penitent.' I never could have dreamed of that kind of lush emotional sound, because that's not what I usually do. So, I feel that I got a lot more than if I had produced *Songs in Red and Gray* myself." ■

J.J. CALE

FROM PAGE 165

that Cale wrote them. People think 'After Midnight' and 'Cocaine' are Clapton songs. Even 'They Call Me the Breeze,' many think it is by Lynyrd Skynyrd." Wooler notes that many of the live versions differ considerably from their studio counterparts.

Paul McManus, who recorded 13 of the 14 tracks on the CD, adds, "It's laid out just like one of his stage sets, even though it was recorded all over the place. That was something he really wanted to capture. And, really, that was the whole point of it. With the pacing and moods of the songs, listening to it is just like being at one of his shows."

The engineer, who describes himself as a "fixer-mixer," met Cale, who also produced the CD, totally by coincidence at his home in San Diego. Before working with Cale, McManus' recording experience was mostly with local musicians.

He was recommended to Cale by Coast Recorders in Hollywood to repair his Ampex 1-inch 8-track deck in 1989. The native San Diegan was able to do the needed work rather easily. And when he finished, the two of them started talking about equipment and music. It turns out that Cale is actually a bit of a technology buff, so with that as a mutual interest they developed a friendship. A few years later, Cale asked McManus if he wanted to tag along with him to San Francisco while he produced John Hammond's *Trouble No More* CD. The engineer didn't work directly on the project, but he ended up being a consulting engineer.

Once they returned to San Diego, they played around doing recordings on McManus' Universal Audio vacuum-tube mixing console. It's quite a historic piece of equipment, and was recently on display at the AES conference in Los Angeles. McManus recalls that in 1993, after getting to know each other pretty well, Cale said to him, "I'd like to make a 'live' album, and I'd like for you to get involved with it. I've made every kind of record out there, but I haven't made a live one. So figure out what we need and let's

do it as small as we can." McManus was caught offguard. "My reaction was surprise and when do we start?" he recalls from his home studio in San Diego.

"Over the years, he had made dozens and dozens of live recordings," says the engineer. "Everywhere he played, they threw up two mics, or something. They used every format known to man then, from cassette to analog reel-to-reel. ADAT and DAT were just on the verge of coming out then. He'd even done a lot of stuff on a PCM F-1." But much of it was done casually or on-the-fly, and, consequently, wasn't of good enough quality to be used for a bona fide release—only "Ride Me High," recorded in 1990 before McManus got involved, made the cut for the *J.J. Cale Live* CD.

Although Cale has a good knowledge of equipment and techniques, he entrusted all of the project's technical aspects to McManus. "J.J. had worked as an engineer back in the '60s with Snuff Garrett, Leon Russell, and Delaney & Bonnie while coming up in Tulsa, Oklahoma," he notes. "He's spent a lot of time in recording studios all over the place, and also worked on Blue Cheer's 'Summertime Blues.' He has a good background, so if I told him I was having a problem with gain, mic qualities or other things, he knew what I was talking about. But he basically gave me free reign. I'd discuss everything with him, showing him block diagrams and things like that, which he found interesting. I guess the best word to describe him is insightful—he has a real good grasp of trends and where things are going. He could discuss things in engineering terms as well as artistic. There are few artists that could do that."

The whole equipment setup to record Cale live fit into four road cases. McManus's basic gear consisted of a Tascam DA-88, a Sony DAT and a Mackie 1604 mixer. "We chose the DA-88 primarily because you could record for more than 40 minutes on it," he remembers. "The earlier ADATs were limited to that. Prior to that, I just mixed live to DAT. The Mackie 1604, which is quite common now, was brand-new then. However, it only had six mic preamps. To get 10 more, we had to buy this box called an XLR-10 adapter and bolt it to the bottom of the board."

Other modifications included using two 4-channel splitter boxes with Reichenbach transformers. That enabled McManus to go directly from the stage mics and get a direct, isolated one-to-one feed. His insert jacks were used as direct outs so his pre-faders could feed the DAT and not need the faders to control his record levels.

Overall, the whole affair was rather homespun. However, quality was still essential and is one of the reasons why the CD took three years to compile while McManus was involved. Those years were not intensive, though. "We'd go out for about a week every other month or so," the engineer recalls. "We could literally be anywhere when he performed, from a small club, being outdoors in a circus tent, an outdoor festival or a grand concert hall. You never knew where you would be next, and that kept it interesting.

"Also, it was rare for me to be involved with a musician who would never play a song the same way twice. He would always keep you guessing. Plus, you didn't always know who would be performing or not be performing with J.J. He had a core band, but he has a lot of friends who'd stop by and sit in. He'd say, 'Hey Paul, we're adding a couple guys here,' and I'd say, 'No problem.' The track layout consisted of one each for J.J.'s vocals, J.J.'s guitar, drums, bass, rhythm guitar and keyboard. Then I had a pair of Neumann U87s in omni position on both sides of the stage. They were always set up between the stage monitors and the front of house. Basically, I was trying to pick up the whole room in a stereo perspective, kind of a spaced-omni perspective."

Preliminary mixing for the CD came down to the artist's and engineer's personal perspectives. Each would do mixes on various versions from the narrowed-down list of songs—sometimes numbering six or seven recordings of the various tunes. Naturally, their respective end results sometimes wound up being quite different. Ultimately, Cale decided which ones he thought worked best, and then he did the final mix on each song. On the album sleeve, the producer is listed as Mike Test, one of a long line of pseudonyms Cale has used for himself and even some of his musicians.

"He's too embarrassed to say he did it himself, and he really is a humble man," comments Virgin's Wooler. "Sometimes, he wonders what all the fuss is about and plays down his contribution to music. He's not the kind of artist you can bully into recording, though. You have to let him do it when he feels it. He's definitely unique."

As for engineer McManus, "The whole experience was definitely one of the high points of my 25 years in audio," he beams. ■

Cool Spins, *FROM PAGE 167*

that mesmerizing and intangibly lush feel of deep, hard, no apologies trance, while adhering to a purposely cynical and matured aesthetic. The only weakness is that Tosca is only as good as the context that it's played in; if, by the third track, you're not frantically searching your abode for a stiff drink and a warm body, something is wrong.

Produced, engineered and mastered by Tosca in their own studio.

—Robert Hanson

Gravity Kills: *Superstarved* (Sanctuary Records)

It starts with a sonic assault that sounds like Nine Inch Nails fused with Marilyn Manson. Yes, it's another example of the current trend of melding hard rock with industrial and synths. But wait—there's more! Jeff Scheel's vocals drip with a morbid disdain for, well, life in general, as he takes on a moody tone reminiscent of Stabbing Westward. The guitars add to this flavor, with pounding guitar lines that twist and turn imaginatively, never truly revealing where the next chord will appear. The structure of each track is found in the simplicity of screaming vocals, rockin' guitar licks and a background wash of computer-based noise. But it works. And there is even a stellar cover of Depeche Mode's "Personal Jesus." Just off a superb tour with Pig-

face and Godhead (with plans for a tour with Sevendust underway) and a slot on the *Mortal Kombat* soundtrack, Gravity Kills are on their way to finding themselves going head-to-head with the big guns of this movement: Ministry, Damage Manual and Murder Inc. Sounds like they're up to the challenge.

Produced by Martin Atkins and Gravity Kills. Studios: Mattress Factory and ASI (Chicago), and Mr.Blood (St.Louis). Mixing: Chris Greene and Martin Atkins at ASI (Chicago). Mastering: Collin Jordan/ASI (Chicago).

—Sarah Benzuly

Ozzie Kotani: *To Honor a Queen* (Dancing Cat)

Anyone who has been exposed to much traditional Hawaiian music has probably heard songs by Queen Lili'uokalani, the musically prolific ruler of the Islands in the late 19th century. Her songs—and there are more than 150 of them—have been covered by countless Hawaiian musicians and singers through the years and form a sort of backbone for the traditional repertoire. To my knowledge, though, this is the first CD devoted entirely to her compositions as interpreted on solo slack key guitar. Playing both steel-string and nylon-string guitars, Ozzie Katani brings out the beauty, joy and sadness in the Queen's songs. His playing positively glistens and shimmers as he moves gracefully from piece to piece. Sometimes his picking etches the melody; other times it sounds like the melody is rising like a vapor from the overtones of the notes he plays—it's a gorgeous, full sound. Two of Lili'uokalani's best-known songs are my favorites here: "He 'Ai Na Kalani" and the venerable "Aloha 'Oe," but every song on the CD is infused with a lovely mystery. The sound on this release, engineered by Dancing Cat veteran Howard Johnston, is stunning, as always.

Producer: George Winston. Engineer: Howard Johnston. Studios: Audio Resource (Honolulu), Different Fur (San Francisco). —*Blair Jackson*

Puddle of Mudd: *Come Clean* (Interscope)

Alright, I'll admit it. I bought the album for the song "Control." With lyrics like "I love the way you look at me/ I love the way you smack my ass/ I love the dirty things you do/ I have control of you," how can you go wrong? But a happy surprise, the rest of the release is great—obscenely loud, intricate guitar grooves and a dynamic vocalist, and I won't hold it against them that they are signed to Fred Durst's Flawless Records. While the tracks contain the anger of Korn and Rage Against the Machine, vocalist Wesley Reid Scantlin sounds eerily like the late-Nirvana frontman Kurt Cobain. But the album also hints at traditional hard rock, with tracks like "Drift & Die" and "Bring Me Down." The album also brings out a little punk with "She F—in' Hates Me," a fun little ditty. An all-around good time.

Produced and engineered by John Kurzweg, except for three tracks produced by Fred Durst. Assistant engineers: Steve Mixdorf and Scott Francisco. Pro Tools editing by Bobby Selvaggio. Mixing: Andy Wallace at Sound Track Studios (NYC). Assistant mixing engineer: Scott Cisco. Studios: Third Stone Recording and NRG Studios (both North Hollywood). Mastering: Vlado Meller at Sony Music Studios (NYC).

—*Sarah Benzuly* ■

"AMADEUS," THE MUSIC EDIT

—*FROM PAGE 122*

however, was slower and suited the scene better than other recordings. On the Thursday before a Monday final dub, I talked it over with Saul [Zaentz], and we decided to record the piece anew.

My assistant, Ling Ling Li, tracked down harmonica virtuoso Thomas Bloch in Finland, and arranged for the flute, oboe, violin and viola players to meet him in Belgium to record at Galaxy on Saturday, two days later. My hands were full preparing for the dub, so during the session I was talking to them by phone while they were sending each take over the Film Center's T1 line.

Tell me a little bit about the equipment setup.

Randall Sanderson had asked me to evaluate the WaveFrame FrameWorks DX system; about the same time, [conductor] Kent Nagano and the Berkeley Symphony were needing help on a CD, so Jim Austin [as engineer and mixer] and I took that on using the FrameWorks. We were so impressed that when *Amadeus* came along, we said, why not?

We used Prism converters after pitting them against several others in listening and reliability tests. After making sure that no one involved wanted to dub from analog, we then began the painstaking process of transferring all of the music from the original *Amadeus* in all of its various forms at 24 bits/96 kHz onto the FrameWorks hard drives.

There was one thing that they did on the original *Amadeus* that I have never seen before. When they mixed each piece of music onto 6-track mag, they made individual tone rolls for each piece and included them in the archived dubbing units. This meant that, even though it had been impractical in the 1984 dub to stop and retone a dozen or so machines every time a new piece of music played back—think of the medley where Salieri is reading through Mozart's scores—this afforded us the opportunity to take our time to re-tweak everything for each transfer of each piece onto the hard drive. We were also using Sondor machines to play back the mag, which use much more advanced transport and audio electronics than were available in 1984. We transferred each and every cut-mag element, since those were the actual mixed masters, as well as the stems, and in some cases, the original 24-track masters.

Any final thoughts? Any other big challenges?

Just giving Mark Berger and Todd Boekelheide the music materials in a form that was easy to work with, and to free them as much as possible from technical issues so they could concentrate on aesthetics. The net result is spectacular, and the sound of *Amadeus: The Director's Cut* has a clarity and sparkle that retains the aesthetics of the original picture, yet improves upon, and further develops, the classic we had known and loved. It may be titled *The Director's Cut*, but it's really the *Director, Producer, Writer, Conductor and Much of the Original Post Production Team Reconsidering and Polishing Up Their Original Draft Cut*, along with some new helpers. ■

L.A. GRAPEVINE

by Maureen Droney

Friends in one room, _The Drew Carey Show_ in another: It's a typical busy afternoon at Merelyn Davis Music, the award-winning, North Hollywood-based editorial house. In business for nine years, the boutique operation has handled music editing for _Friends_ since the show's debut in 1994, _Drew Carey_ since '96, and, along the way, has also managed to fit in seasons of _Veronica's Closet_, _Norm_ and _Jesse_, among other shows.

Editors Merelyn Davis, Gerry Rothschild and Sue Eller, along with office manager/clearance specialist Renee Bartlett, are a close-knit bunch. Together since '94, they've developed the kind of rapport and shorthand communication skills that enable them to cheerfully turn out high volume on a tight schedule. With 24 new episodes of _Friends_ per year, 22 of _Drew Carey_, plus re-edited home video versions of current and past seasons of _Friends_, MDM is definitely into maximizing efficiency, a fact that's immediately apparent from the company's offices' organized, no-nonsense look.

Although all three editors are familiar with and work on each show, the labor is basically divided up with Davis on _Drew_ and Rothschild on the current season of _Friends_. Eller, meanwhile, is deep into _Friends_ of seasons past; on the day I stopped in, she was reconforming season three for home video and DVD: re-editing music to match the enhanced versions of each episode, which have commercials removed and footage added.

Friends and _Drew_ each use a single composer (Michael Skloff on _Friends_ and W. G. "Snuffy" Walden on _Drew_) who records cues with a regular complement of musicians. Both shows are also dubbed by the same mixer, Charlie McDaniel, on Dub 8 at the nearby Warner Bros. lot. And on both of these long-running hits, instead of writing specifically for an episode, the composers turn out batches of variously styled music, from which MDM tracks each show.

PHOTO: MAUREEN DRONEY

Taking a break at Merelyn Davis Music: (L-R) Gerry Rothschild, Renee Bartlett, Sue Eller and Merelyn Davis

"We tell them what we need, sort of like a Christmas wish list," says Davis with a laugh. "And then we get four or five big library sessions a year from them—a big 'glurp' of cues—which we'll put into Pro Tools. Of course, for _Friends_, after eight years we've amassed a large library. But the style of the show changes, and that limits what we can use from the library in any given season. For example, the style now is that cues have been getting shorter and shorter, and they're using less exteriors."

All three editors have music degrees,

—CONTINUED ON PAGE 180

NASHVILLE SKYLINE

by Dan Daley

The steel guitar had barely been invented when J.R.R.Tolkien churned out _Lord of the Rings_ nearly 50 years ago. Nonetheless, one of only two officially sanctioned _Lord of the Rings_ recordings comes out of Nashville.

Paul Whitehead, owner of The Iliad Studio, was a pioneer in developing links between music and marketing, the most well-known being his nearly two-decade stint choosing, arranging and recording lush romantic symphony recordings for sale at lingerie retailer Victoria's Secret. Whitehead is a regular client of the London Symphony Orchestra, using them for most of the classical recordings he does, then bringing the tracks back to The Iliad for editing and mixing.

That was the case with Symphony No. 1, written by Dutch composer Johan De Meij, a haunting symphonic piece that Whitehead describes as being "kicked around for years" in search of the right application. The Tolkien estate apparently found the piece to its liking to make it the official work for what's shaping up as a season of _Ring_-mania. The score to the film was written and produced by veteran film composer Howard Shore (using the London Philharmonic Orchestra), but Whitehead's recording of Symphony No. 1 essentially acts as the soundtrack to what is likely to be the marketing event of the year.

Whitehead usually records the LSO at Abbey Road or CTI in London through the Neve consoles that are used heavily for classical work. When he was approached for the _Ring_ project, he chose to bring the LSO to a lesser-known Lon-

don venue, Golders Green Hippodrome, home to occasional BBC orchestra broadcasts; in this case, the first non-BBC orchestral recording use of the venue in over 50 years. The recording was done on an SSL 9000 J console, the first time Whitehead has used one for a classical-style piece, he says, adding that he found it sonically competitive with Neves for classical work. The music was recorded to a Sony 3348 digital multitrack. Whitehead produced, with longtime classical engineer David Hunt engineering. "The place is an absolute treat to work in," says Whitehead. "It's an old theater, and it's just perfect for classical recordings."

Composer Johan De Meij (left) and producer Paul Whitehead at The Iliad.

Whitehead brought back the tracks to Nashville and played back off The Iliad's Studer D-820 digital deck (which is DASH-compatible with the Sony). The tracks were mixed, in stereo, through The Iliad's Harrison Series 12 MPC console by Iliad staffer Bob Wright, and edits were done by staffer Phil Barnett on the studio's Sonic 96/24 hard disk system, which was also the mixdown format. (A 5.1 surround mix of Symphony No. 1 is being contemplated, Whitehead adds.)

Whitehead and The Iliad are prime examples of how studios and studio owners can adapt their facilities, talents and ambitions in a changing studio business landscape. And though I've known him

—CONTINUED ON PAGE 182

NEW YORK METRO

by Paul Verna

A new spin on the old testament: On the surface, a violin and a piano recording interspersed with spoken-word narration should be as straightforward as a session gets. A couple of mics on each instrument, an hour spent tweaking the mic placement, an isolation booth for the narrator, and the tape's rolling.

But for pianist Ben Zebelman, violinist Lorenza Ponce and co-producer Steve Rosenthal, a recording of a song cycle based on the Old Testament poem "Song of Songs" turned into a showcase of their collective talents—Zebelman and Ponce as writers, performers and producers, and Rosenthal as a co-producer, engineer and mixer. It also made full use of Rosenthal's studio—New York' famed Magic Shop—with its ample tracking spaces, extensive collection of vintage mics, Neve 80 Series console, EMT plate and a Pro Tools TDM system.

"We worked out this elaborate setup for the piano and violin where you use pairs equidistant from the sound source," explains Rosenthal. "We had two Neumann U67s on the piano for close-miking, two Neumann KM56s at a medium distance and a pair of Earthworks mics for ambience. For Lorenza, we used Neumann U47s up close, Coles 4438 ribbon mics a little further out and a pair of Neumann U87s in the room. This gave us a lot of options at the mixing stage if we wanted to change tones for different songs."

In addition to the two sets of six mics, Rosenthal placed a Neumann FET 47 underneath the soundboard of the piano, a 9-foot Yamaha grand with a low-end resonance that he describes as "enormous."

All mic signals went straight into the Magic Shop's prized Neve, an 80 Series custom wrap-around board with 56 inputs of Flying Faders automation. The tracks were recorded to the studio's Pro Tools MIXplus system and mixed back to Pro Tools through the console.

Zebelman says he is delighted with the way the recording turned out. "Steve is really into the overall sound of things," he says. "The way he blended the violin and the piano, they both sound great and different than they might on other albums."

Ponce, who had previously recorded at the Magic Shop with Sheryl Crow, Mitchell Froom and others, says, "Steve always gets an amazing sound on my violin. With this recording being just violin and piano, we had the luxury of using multiple mics on the violin, so we were able to capture the three-dimensional qualities of the sound emanating from the instrument."

For the narrators, Zebelman, Ponce and Rosenthal debated at length if they should record them in a live-sounding room, trying to match the ambience of the instrumental recording, or go in the

—CONTINUED ON PAGE 182

Musician/composers Lorenza Ponce and Ben Zebelman take a break from recording sessions at the Magic Shop to catch up on same essential reading.

SESSIONS & STUDIO NEWS

NORTHEAST

Brit pop sensation Stereophonics laid down three new songs in Studio A at Kampo Studios (NYC) for a live taping for Spinner.com. The session was engineered by Greg Thompson and assistant engineer Alan Ford. Also at Kampo, They Might Be Giants were in Studio C with engineer Pat Dillet, mixing a live show for an upcoming documentary film release.

SOUTHERN CALIFORNIA

The Red Hot Chili Peppers paid a month-long visit to Studio 2 at Cello Studios (Hollywood), tracking some new material for a forthcoming Warner Bros. release. Rick Rubin was in to produce. Jim Scott and assistant Ryan Hewitt engineered. Island/Def Jam band Rusted Root also tracked and mixed in Studio 3. Bill Bottrell produced and engineered the sessions with assistant Alan Sanderson. New band Headspace and producer Neil Avron took over Studio 1. Dave Schiffman engineered and Robert Read assisted. Cello also hosted sessions with Drag Pipe and producer Dave Sardy, Tom Petty and producer George Drakoulious and Weezer, who are self-producing their forthcoming Geffen release... Engineer Dave Donnelly has mastered a number of projects at DNA Mastering (Studio City), including Ultrapull for Gold Circle Records, *Bandits Soundtrack* for Sony, Nelly Furtado for Dreamworks, *The Shipping News Original Score Album* for Miramax and JimmyEatWorld for Dreamworks, among others.

Idlewild Midwest? Devon Allman, son of Greg Allman, took a break from recording at Four Seasons Studios (St. Louis) with engineer Steve Higdon (left).

SOUTHEAST

Two-time Grammy-nominated engineer/mixer Bob Rosa and producer Marcello were busy at Bogart Recording Studios (Miami) tracking vocals and mixing a forthcoming Universal LP with artist Paulina Rubio. Rosa also compiled and mastered Maverick Musica's latest Latin compilation LP, and mixed several tracks with producer Hal Batt for Latino artist Freddie Colloca...Bob Weston stopped in at Chase Park Transduction (Athens, GA) to engineer Jet By Day for Moodswing Records. Eric Bachmann and David Barbe mixed the forthcoming second album from Azure Ray for Warm Electronic Recordings. And producer/engineer Andy LeMaster worked on a remix for R.E.M.

Silent Sound Studios (Atlanta) hosted TLC and their production team of Babyface and Daryl Simmons (pictured with Chilli of TLC). Paul Boutin engineered the session with Craig Taylor assisting.

NORTHWEST

Hyde St. Studios (San Francisco) welcomed the BaAka pygmies from the Ituri Forest of Africa to record compositions for a performance by the Lines Ballet. The sessions were a collaboration between Alonzo King's Lines Ballet of San Francisco and Nzamba Lela, a 16-member ensemble of musicians and dancers from the Aka clan of the Mbuti. The project, entitled *The People of the Forest*, was produced by Michael Ward and engineered by John Vigran and assistant Erik Dyba. Others sessions of note at Hyde included Me'Shell N'degeocello, Insane Clown Posse, Mary J. Blige and Boy George.

STUDIO NEWS

Track Record Studios (Hollywood) recently installed an 80-channel Solid State Logic SL 9000 J Series SuperAnalogue console in its North Studio...Conway Recording Studios (Hollywood) hosted an all-day open house to celebrate the installation of a new 72-channel Neve console. ■

Ludacris (left) and studio owner Glen Schick at Glen Schick Mastering (Atlanta) finishing up his now platinum LP, Word of Mouf.

Please submit your Sessions and Studio News to Robert Hanson. E-mail to RHanson@primedia business.com; fax: 510/653-5142 or snail mail: 6400 Hollis St., Suite 12, Emeryville, CA 94608. Photo submissions are always encouraged, and please include the name(s) of the artists, producers and engineers on the project, and the location of the studio.

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and Davis and Rothschild both have a background in scoring from library music—notably on HBO's groundbreaking quirky *Dream On*, which was nominated twice for an MPSE (Motion Picture Sound Editors) award. "That was a challenge," Davis comments. "Except for the main title by Michael Skloff, there was no music written for the show at all. We used our libraries, and it was hard work."

MDM's main editing room is fitted with a Mackie 24-channel, 8-bus console, Pro Tools 5.0.1 running on a Power Mac G4 with a MOTU Micro Express interface, and IBM Ultrastar 9.1GB hard drives. Monitoring is on KRK Rokits for near-field, and—perhaps surprisingly—UREI Model 829 Time-Aligns for mains. "We love the UREIs," says Rothschild. "You can hear things on them that you cannot hear on close monitoring. We use them to check each show, because you definitely don't want to be caught on the stage hearing something for the first time."

While most music now arrives at MDM on CD, multiple formats still show up, from DA-88, ADAT and DAT, to hard drives with a wide array of software incarnations. "It's the plight of the music editor right now," says Davis. "It's tricky with software and systems and formats all over the place."

For dubbing, Rothschild and Davis carry a hard drive to the stage with the current episode's, music on it, along with—just in case—the entire music library of each show. (Isn't digital wonderful?) The number of tracks delivered to the stage varies. On *Friends*, the dubbing stage has eight tracks dedicated to music, but for certain episodes, Rothschild might go 25 tracks wide, making for some muting and unmuting at his onstage Pro Tools station. And, according to Davis, for this year's *Drew Carey* season opener, music was 30 tracks wide.

"Drew is famous now for his musical numbers," Davis comments. "The season premiere had five music video-type segments, with guest artists recorded live on the stage at Warner. We got DA-88s with multiple tracks and multiple takes. The picture editor did his thing, then we ended up doing—virtually—music video, synching everything in post. You're cutting between four takes, but it has to look like one, and some cuts might be as small as a second long. It was quite a production.

"In general," she continues, "we deal in half seconds to three seconds. People don't realize what you can do in that amount of time. Each bit has to have a mood; some of them even change from one side to the other—say if a scene goes out laughing and then comes back solemn. There are all kinds of things you can do in a second!

"All three of us are musicians with degrees in music and that helps us understand and speak the language. We can talk 'dominant' and 'subdominant' or say 'less on the tonic' when we need to. I describe us as the people who translate back and forth between the producer, the composer and what we hear on the stage."

"When it comes to music editing," concludes Eller, "no news is good news. If people can hear what we did, then we didn't do it right. If you've done your job well, it's very low-key and no one notices. It's when they say, 'I hate that piece, what else do you have?' that you have to spring into action."

PHOTO: MAUREEN DRONEY

Rick Will (center) mixing with Skindred in Ameraycan's renovated Studio B.

"Onward and upward" is the motto over at Ameraycan/Paramount where owners Adam Beilenson and Michael Kerns just keep on truckin'. Latest developments at the dual-location facility include a total redo of Ameraycan's Studio B, including the installation of an 80-input SSL G plus console.

Ameraycan, on Lankershim Boulevard in the NoHo Arts District, is the Valley branch of the business (Paramount is in Hollywood at Santa Monica and Vine), purchased by Beilenson and Kerns last year from its original owner, artist/producer Ray Parker, Jr.

"We redid the room as a first-year anniversary present to ourselves," explains Kerns. "We didn't think it was a good financial move to renovate right when we moved in, but 2001—at least up until September—was a good year, so we decided to go for it."

The remodel was extensive, with the room first stripped to its soundproof shell, then rebuilt to a design by Waterland's Vincent Van Haaff. In an unusual move, acoustician and room-tuning specialist Steve "Coco" Brandon was called in from the get-go to consult along with Van Haaff.

"It was something different for them," says Beilenson. "Vincent is great, from his design to his cost and his willingness to listen. We've always admired his rooms. Coco has been tuning this room since it was built in 1979; he knows everything about it. It was great to have the two points of view, and I think they got a kick from working with each other."

Studio B's new look is clean, simple and ergonomical, featuring granite flooring and an extensive use of maple—both on the walls and in the custom studio furniture built by Larry Jackson. "One of the things we liked about this facility originally was its solid construction," notes Beilenson. "That's a tribute to Jack Edwards, the original designer. The structure itself was very sound; what we did was enhance it."

The 4080 G Plus SSL, with E Series EQ and Ultimation, came from Miami's Hit Factory/Criteria Studios, where it was most recently used by engineer/producer Bruce Swedien to record Michael Jackson.

"Obviously, the console was a difficult decision," says Beilenson. "We talked to a lot of people, from producer/engineers like Rob Chiarelli, Darryl Swann and Rick Will, to producer/managers. At first we were asking if we had to get a J Series SSL, because, although that will probably be our next step, it's a big one. But later, when we asked people if we should take the step to a G Plus first, the answer was a resounding 'yes.'"

During construction, the control room's front wall was reinforced. It now houses George Augspurger mains fitted with TAD drivers, Emilar horns and JBL Super Tweeters, along with two JBL subwoofers. Cosmetic upgrades, including new lighting, were made to B's recording area, and space for a private, skylit lounge was carved out of what had originally

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been Ameraycan's large lobby. A separate machine room was built to house Studio B's two Studer A827 multitracks, which complement a Pro Tools MIXplus 24 system.

"Some studios are eliminating their analog multitracks," says Kerns, "but that may be premature. We still get a lot of people using them for some part of the project. Technology is only one part of the music-recording business; the other part is about what appeals to the ear, like vintage mics and analog tape. You need both right now. That's tough for studios, to have techs who can keep both technologies going. It's the same with microphones and outboard gear; you have to have vintage and new."

Gear recently added to Studio B's already extensive list includes Distressors, Pultecs and Avalon compression and EQ. Also new in the room is an innovation designed by Paramount/Ameraycan chief engineer Tom Doty: a custom SSL/Pro Tools transport interface that permits an SSL G Series computer to control Pro Tools transport functions during mixdown. Dubbed the "G-Link," the one-rackspace device is, according to Doty, "quite transparent" in operation, allowing for "rewind" speeds comparable to those of a hard disk. (As G users know, without adaptation they must run an analog machine in tandem with Pro Tools to have transport, even if the analog isn't being used. Can you spell S-L-O-W?)

Cosmetic refurbishing has also gone on in the rest of the Ameraycan facility. Studio A, which houses a 56-input SSL G console (soon to become a 72-in with the addition of 16 modules left over from Studio B's installation) and a second G-Link interface, now also boasts a newly decorated and more private lounge. New gear added to A includes Distressors, more LA-2As, a Manley Variable Mu Stereo compressor and two pairs of dbx 160VUs. ■

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NASHVILLE SKYLINE FROM PAGE 177

and the studio for years, and have written about its unique music/marketing niche, the release of the *Ring* recording gave me an opportunity to ask Whitehead if having the studio in Nashville conferred any advantage over it being in, say, Sheboygan, given that it's not a commercial facility. Whitehead's response underscores what has kept (and which will continue to keep) Nashville a music Mecca. "There are very few places on Earth where you

L-R: producer Dann Huff, engineer Jeff Balding and assistant engineer Jed Hackett at The Sound Kitchen (Nashville) mixing the new release from Lyric Street Recording artist SHeDAISY.

can tap into such a deep and talented pool of musicians and arrangers and engineers," he explains. "And do it affordably."

Though Whitehead is the studio's sole client, to call The Iliad a project studio is a misnomer. The Tom Hidley-designed, Michael Cronin-built studio is sizable, but Whitehead regularly uses commercial facilities for tracking, mostly in London but occasionally elsewhere in Europe and in Los Angeles. He actually might be spending more money on studio rentals than many Nashville country music producers would. But not in Nashville. "You can get a lot out of the Nashville music industry infrastructure, you can rent any piece of equipment you want here," he says. "But the studios aren't oriented to the kind of music I'm doing. You can't walk into a studio that does rock 'n' roll and country records and expect them to understand the needs of classical music. The London studios do classical day in and day out. They understand what you're trying to accomplish. I think that's critical for any specific type of music. That's why people make country records here—Nashville knows country. And it knows rock 'n' roll. It just isn't that familiar with Mozart."

Neither is much of the rest of America. Classical music is continuing to lose ground as a radio format and remains single-digit in terms of sales market share. Nashville has a reputable symphony orchestra, which, if not exactly world-class, is still capable of fine work, such as its joint performances with Mark O'Connor and Yo-Yo Ma (another wonderful Nashville/classical pairing). The Nashville Symphony's conductor, Kenneth Schemmerhorn, has rightly gotten significant credit for keeping the symphony respectable, but Whitehead is arguably just as responsible for keeping classical music a working part of the Music City's musical palette, and in the process connecting Nashville to other music capitals. ■

Send your Nashville news to Dan Writer@aol.com.

NEW YORK METRO FROM PAGE 177

other direction. They chose the latter, preferring the intimacy of a small iso booth for the spoken segments, which are read by actors Laurie Brown and Andrew Marston.

The version of "Song of Songs" that Zebelman and Ponce used is a new translation by Ariel and Chana Bloch. Its inherently erotic nature lent itself to the interplay between the violin and the piano, representing the woman and man, respectively. The music was written quickly, with Zebelman and Ponce both bringing a small amount of complete material to the collaboration and composing the rest in a marathon session at Zebelman's home studio. Many of the bits that the two artists improvised on the spot were used in the final piece.

"A lot of times we just jammed out," says Ponce. "I'm a spur-of-the-moment person, and I believe that what comes out of you first is your most heartfelt emotion."

"Song of Songs" marks the first collaboration between Zebelman and Ponce, two acclaimed New York musicians who were brought together by music industry veteran Robert Fisch—who serves as executive producer on the project—and Rosenthal, who had worked with both artists independently.

Zebelman's previous works include the independent albums *Kol Nidre Variations* and *Suite: Noah's Ark*, based, respectively, around the ancient Jewish prayer and the Biblical story of Noah. Zebelman has won the Howard Hanson Music Award and the Miles Davis Jazz Award.

Violinist/vocalist Ponce has two solo albums to her credit: *Imago* (Angel/EMI) and the independently released *Mystic Fiddler*. As a session/touring musician, Ponce has worked with Sheryl Crow, Bon Jovi, Ben Folds Five, Jon Anderson, John Tesh and Kitaro. She was recently featured alongside Bon Jovi in *The Concert for NYC* and *America: A Tribute To Heroes*.

Despite Ponce's busy touring schedule—she recently hit the road with Crow's band—she and Zebelman plan to perform "Song of Songs" at least once at an event that benefits the children's programs of Cancer Care. The album's release and gala performance are both scheduled for April 2002.

As far as the Magic Shop is concerned, the 12-year-old studio is alive and kicking, reports Rosenthal, denying rumors of its demise. True, recent times have been tough for the studio business throughout the industry, particularly in New York, especially in the downtown area where Magic Shop is located (and where two

other mainstays, Greene Street Recording and Sorcerer Sound, recently closed). And it's also true that Magic Shop has seen its share of canceled sessions lately and felt nothing but a chill from out-of-town clients who used to regularly travel to New York to record, but are now finding other venues. But Rosenthal is taking it on the chin, defying the bleak economic climate, making renovations in his old shop and keeping his fingers crossed for bluer skies.

Avid Users of Pro Tools: Avid and Digidesign hosted the first-ever Avid World East and Pro Tools Conference, an educational forum for the film,TV and music production communities. Held December 10-12, 2001, at the New Yorker Hotel, the event featured keynote speeches and workshops by film editors Mark Goldblatt (*Pearl Harbor*), *Mix*'s "Sound for Film" columnist Larry Blake (*Traffic*), Eugene Gearty (*Crouching Tiger, Hidden Dragon*) and Andy Mondshein (*The Sixth Sense*). Avid Technology's president and CEO David Krall also spoke.

On the music side, engineers Jan Folkson (Steely Dan), Chris Ribando (Mary J. Blige), Paul Falcone (Michael Jackson) and Rich Tozzoli (Al DiMeola) delivered sessions of various Pro Tools-related topics. Tozzoli's "Mixing in Surround Formats," which showcased his 5.1-channel recordings for Hernan Romero, DiMeola and Vernon Reid—as well as a live Joni Mitchell tribute concert in Central Park—was particularly well-received, drawing an audience of 85 people and raves from the crowd.

The Avid World East and Pro Tools Conference was organized by New York marketing firm Mindshare Ventures and digital media training center Future Media Concepts. Mindshare president Rick Friedman says, "More than 800 people attended the event, and over 400 came to the classes, so we're very pleased with the turnout. We're also pleased that people ranked their satisfaction with the event at 3.9 out of a possible five. For the first time out, we feel we've hit a home run."

The attendees were as diverse as they were enthusiastic, representing 26 states and a number of overseas countries, including France and Israel, according to Friedman. Given the success of the conference, Friedman and Future Media president Ben Kozuch are exploring the possibility of holding Avid/Pro Tools expos on the West Coast.

Stay tuned. ■

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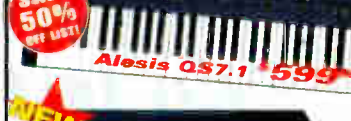

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—FROM PAGE 26, LCD! DLP!

pared to DLP. Interestingly, this is what people used to say about CRT projectors when comparing them to LCDs.

DLPs make a quite decent black, but have somewhat lame color linearity in darker shadows. Color *purity* is far superior on the DLP machines, and they don't blow out bright colors or white as much at all.

Here is some interesting information that I don't think you will find anywhere else. LCDs twist their light-blocking crystals. Even though a complex series of digital clocks and pulse-duration deltas control how much the crystals lean and therefore how much light gets through the pixel, the actual mechanism is, in fact, analog. So, nonlinearities and speed (ghosting) issues aside, an LCD projector is analog, and there is therefore no inherent banding issue.

Ghosting is a consideration, as it makes fast-moving image elements blur and soften, just like the cursor on your laptop's screen when you move it rapidly. This lowers the sharpness and effective resolution of fast-moving data, which, though technically bad, actually aids in generating the film-like quality of LCD, as it is a kind of motion blur.

But DLP systems are little mirrors with plus and minus 10% total range. If you think about it (and it took me a moment to realize this), they *can't* be operated linearly. You don't want the light from each pixel moving across the screen as the mirror moves, you want the brightness to change. So...

They are moved from full-on to full-off as rapidly as the technology allows (about 50 kHz), and the ratio of the on-to-off duration determines how much light that pixel delivers. Full-on reflects all the light into the optics, while full-off reflects all the light into the best flat black light trap they can design and still fit within less than 20° off-axis.

So DLPs are digital, and the top speed of the mirrors determines not only how fast you can spin the color wheel, but how many levels of color or gray you can fit into the time allowed for each frame. In other words, there is presently a clear limitation to the bit depth of the range. Consequently, there is clearly visible grayscale banding in the mid- to darker grays on these DLP projectors.

There is more. Modern projectors are expected to have usable image scaling, interlace-to-progressive conversion and reasonable motion artifact solutions. Last year, all DLPs (and all plasmas for that matter) had 8-bit processing to handle these functions, and you could see it. They looked horrible. All shadows banded, all sunsets looked like cartoons. Faces danced with dither, wall colors changed as the processor tried to round to the nearest 8-bit number.

But two of the DLPs I found use 10-bit processing, and the difference is night and day! Let me try to sum this up in techno-speak: 8-bit bad, 10-bit good. Not perfect, but I will buy at 10-bit.

By the way, it seems that the next generation of TI mirrors has plus and minus 12° of rotation, and may be more than twice as fast. Twelve degrees would mean a 20% increase in an already impressive contrast ratio, and faster addressing could mean even faster color wheels and more time for longer (higher-resolution) bit depth. Rumors also promise even higher native pixel count as well.

DLP color accuracy is, well, not the technology's strongest point. It was not uncommon in my week of testing to see the DLP go crazy with small scene-change color shifts that the LCD machines barely noticed, and the reference TV completely corrected. Some of the DLPs that I tested were very, very touchy. The lower the video feed quality, the more the difference in the reference TV's and the DLP's output.

And my choice? Even with the technical limitations brought up this month, I have actually decided to buy a DLP. I mean, they ain't perfect, but they will make you want to sneak in during downtime to watch movies, and they will knock your socks off.

After much comparison and many tech calls, two low-cost projectors emerged as the most impressive: the Sharp XV-X900U and the Marantz VP-12S1.

Both have the 5x color wheel trick, 200 cool features and all kinds of inputs (oddly, neither has DVI). But I have yet to get both units in here at the same time, so I can't finish this month's column with the definitive first-hand advice that I had hoped. Damn, I hate it when a plan doesn't come together.

I could have faked it (an alarmingly common solution for this dilemma in the world of equipment reviews), but I'd have to hide out in Bogota if I guessed wrong. So, with luck, I will report the winner—and the reasons why—next time. ■

SSC won't write us a bio this month. Sometimes you just have to give him some room.

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—FROM PAGE 32, ONTOLOGICAL EXISTENTIALISM

the level changed. Apparently, very few of his patients can tell (or articulate) the difference between the two.

I was delighted when I discovered that if I locked my fingers together in front of me and tried to pull my hands apart, the intensity of the sound would diminish noticeably. Not that I could walk around all day like that, but it meant I could feel that I had at least a tiny bit of control over the thing.

So, after two hours, what did this leading scientific authority have to say about what was causing my problem? He shrugged and said that he really had no idea. The good news was, he agreed with Dr. Halpin that it didn't have anything to do with the sound levels I had been subjecting myself to. The bad news was that, although he thought it might go away by itself, "I wouldn't want to bet on it." He suggested getting a noise-making machine like his, or keeping music going in the background all the time. And he did have one optimistic thing to say: "In three months, you'll hardly notice it."

He was right. I still have the noise in my head a lot of the time, but I really only notice it occasionally, and it rarely bothers me. (Although, at the moment, because I'm thinking about it, it's pretty loud.) But the whole experience of learning about tinnitus and what audiologists know and don't know has actually brought to my mind a whole new set of questions. Is research in audiology so far behind what we in the audio profession consider to be current state-of-the-art that we know more about how frequencies in the top octave of our range are supposed to behave than audiologists do? What happens if you look at it the other way around? How important is it really that our signal chains be dead flat up to 20 kHz, because most of us can't hear anywhere near that high, and audiologists can't measure how we respond to those frequencies? And what about the world *above* 20k? What is its role in the way we perceive music and sound—if it has any?

I've started pursuing these questions, and I've been coming up with some surprising answers, which I'll tell you about in a future column. In the meantime, keep your levels down and your ears protected. ■

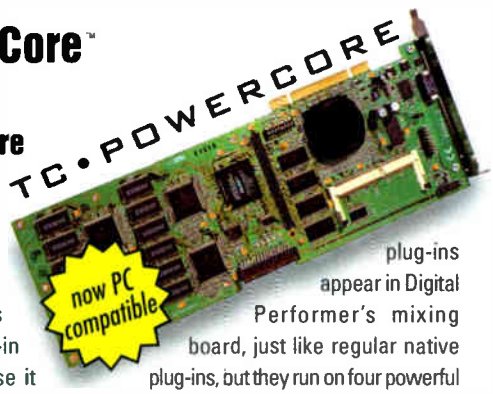
Paul Lehrman is a composer, educator and Mix*'s online editor. His personal site is paul-lehrman.com.*

Expand Your MOTU Desktop Studio

Start with this ultimate FireWire-based mobile rig with plenty left over to expand

TC • PowerCore™

DSP Turbo™ for MAS • PowerCore Plug-ins



TC•PowerCore is a major breakthrough for Digital Performer's real-time MAS plug-in environment because it provides DSP turbocharged plug-in processing. At last, the renowned TC TOOLS/96 studio-quality FX package (included), with TC MEGAVERB, TC Chorus/DELAY and TC EQ^{sat}, can be at your fingertips in Digital Performer, plus other TC I Works plug-ins such as TC MasterX and TC Voice Tools (sold separately). These powerful plug-ins appear in Digital Performer's mixing board, just like regular native plug-ins, but they run on four powerful 56K DSP chips on the TC•PowerCore PCI card. It's like adding four G4 processors (equal to 2.8 gigahertz of extra processing power!) to your computer. Run 12 studio-quality TC plug-ins with no hit on your CPU power, and run other native plug-ins at the same time! And coming soon from 3rd party developers: Waldorf Vocoder, Antares AutoTune, TC Helicon Voicecraft and others.

TC | WORKS

bias Peak™ 3.0

Advanced waveform editing and mastering

BIAS Peak 3.0 for Mac OS 9 and X, is the ultimate editing, processing, and mastering companion for Digital Performer! Peak gives you lightning fast, nondestructive waveform editing with support for audio files up to 32 bits and 10 MHz, including 24-bit/96kHz files. Unlimited Undo/Redo gives you the freedom to work creatively. Select an audio region in DP, choose the "Use External Waveform Editor" command, and instantly switch into Peak! Peak's sophisticated options for on-the-fly marker, region and loop creation are simply unparalleled. Advanced DSP and looping tools include Convolve, Repair clicks, Loop Tuner™, Loop Surfer™, Loop It™ and Guess Tempo™ and more. Process thousands of files, or just a few, using Peak's batch processor. Peak directly supports all MOTU audio interfaces and includes Roxio Toast™ Lite CD for burning your own redbook audio CDs directly from Peak's powerful playlists. Create web or multimedia content for export with multiple file formats, including Apple's QuickTime.

Aardvark Aard Sync II™

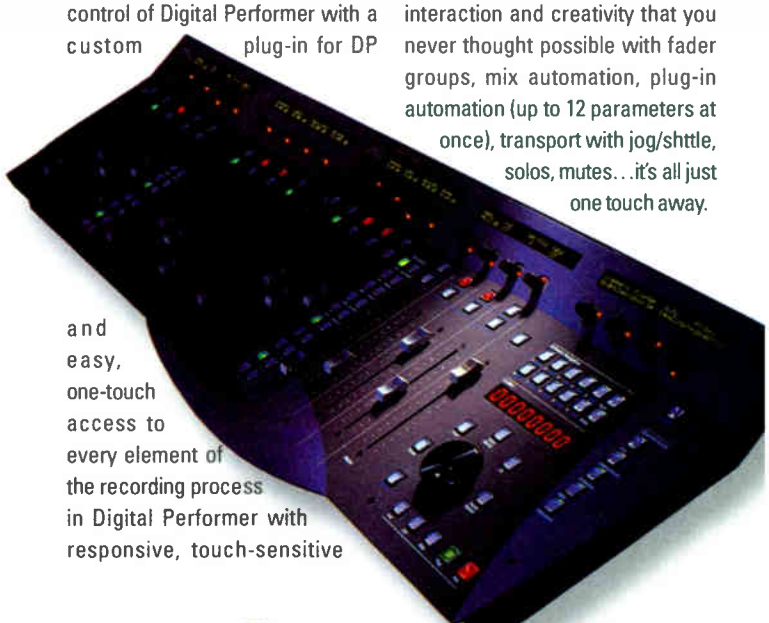
Ultra-low jitter master clock for your MOTU studio

The problem? Multiple word clock devices that you need to sync perfectly with your MOTU system. The Solution? The AardSync II Master Clock from Aardvark. The Aard Sync II will make everything in your studio slave together smoothly. With four industry standard word clock outputs and ultra low-jitter performance, you can set the Aard Sync II to generate any digital audio sample rate desired—not only 44.1 and 48 kHz, but also the pull-up and pull-down rates required for film and video applications. The AES/EBU outputs are low-jitter approved and make any converter sound more accurate. No clicks, no pops, no falling out of sync! Slaves to video blackburst in both NTSC and PAL/SECAM format. If you've got multiple digital audio devices in your MOTU studio that need to stay in sync, Aard Sync II is the wonder box you've been looking for. Call Sweetwater today to find out more.

RADIKAL TECHNOLOGIES SAC-2K™ controller

Precision touch-sensitive automated worksurface

The Radikal Technologies SAC-2K sets a new standard for hands-on control of Digital Performer with a custom plug-in for DP and easy, one-touch access to every element of the recording process in Digital Performer with responsive, touch-sensitive automated controls. Within minutes, you'll achieve a whole new level of interaction and creativity that you never thought possible with fader groups, mix automation, plug-in automation (up to 12 parameters at once), transport with jog/shttle, solos, mutes…it's all just one touch away.



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MOTU DP3 audio workstation software
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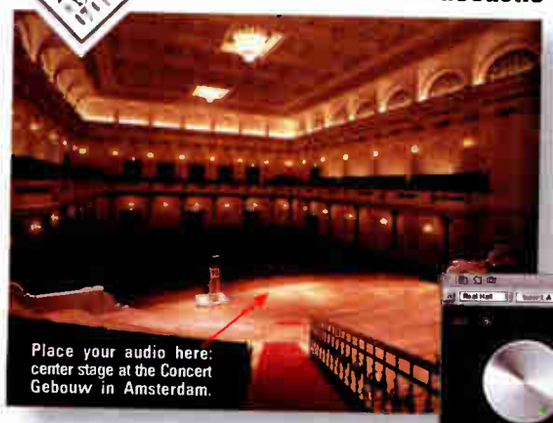
MOTU 828 FireWire audio interface
Or a MOTU PCI interface like the 2408mkII or 1296

Altiverb™ Add real acoustic spaces to your mix with the first and only sampled reverb plug-in



Pictured here is the Concert Gebouw, a world-famous concert hall in Amsterdam with superb acoustics. Altiverb, the first (and only) real-time sampled acoustics plug-in, delivers the sound of this hall to your Digital Performer virtual studio — along with dozens of other sampled acoustic spaces. Altiverb is an astonishing breakthrough in reverb technology because it fully reproduces the acoustic qualities of real spaces, rather than synthesizing an approximation with artificial algorithms. Only a few very expensive ($10K+) hardware processors offer sampled acoustics processing, but Altiverb gives you this unsurpassed level of realism for less than $500, thanks to the amazing "Velocity Engine" Altivec processor in all G4 Power Macs. Provides dozens of real spaces, from concert halls to closets, or sample your own! Now shipping exclusively for Digital Performer. VST version coming soon.

UVI Plug-ins™ Universal Virtual Instrument plug-ins for Digital Performer and MAS

bigfish audio™

The UVI Plug-in will revolutionize your Digital Performer system. It's a playback sampler that opens as a plug-in right inside your Digital Performer project. With nine brand new titles to choose from, you can have a different sound library with hundreds of samples at your fingertips. What makes this plug-in so unique? Instead of trying to cram an entire sound collection into a ridiculously small amount of RAM, these libraries serve as a virtual sound module right inside DP. No more wasted time loading CD-ROMs, waiting, listening, loading again, waiting some more... With UVI plug-ins, the patches are loaded in seconds and are available directly inside Digital Performer. There's nothing quite like this! London Orchestral Percussion, Prosonus Orchestral Collection, Prosonus Grand Piano, Six PlugSound Volumes: 1-Keyboards, 2-Frets, 3-Drums, 4-Hip Hop Toolkit, 5-Synth Collection, 6-Global and more titles on the way.

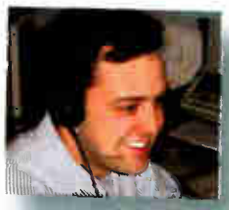
U V I Plug-in™

Cool School Interactus™ Vol. 6 — Interactive Training for Digital Performer 3

COOL BREEZE SYSTEMS

From the newbie to the guru, there's no better way to get more out of Digital Performer than CSi-Volume 6. It's like having a DP product specialist looking over your shoulder, with click-for-click tutorials, a massive glossary of DAW-related terms and over 40 movie tutorials. Includes our new "AutoPlayer" mode: just sit back and soak up the info!

SweetCare™ 24-hour support from the MOTU system specialists!



Nobody knows MOTU-based systems better than Sweetwater. So we've developed SweetCare, one of the most comprehensive approaches to technical support in the music industry. On the web or in person, our commitment to helping our customers is our passion. Our 23 years of experience with advanced music technology products from companies like MOTU is at your disposal 24/7 via our online 24-Hour SweetCare Support Center or in person six days a week with new extended hours on Saturdays. SweetCare includes on-line services beyond just Q&A, such as in-depth articles, live media, online forums, and the most complete knowledge base of musical and technical information available anywhere. Visit www.sweetwater.com/support for complete details.

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Expand Your MOTU Desktop Studio

Start with MOTU's ultimate 96kHz, 32-bit native recording system

Avalon VT-737 SP™ Tube preamplifier / opto-compressor / Class A equalizer for your MOTU interface

The VT-737SP brings that magic Avalon sound to your MOTU workstation. Run your dullest, most sterile mic through the VT-737 SP and you'll be amazed at how warm and sweet it sounds. This 2U space combo brings a new standard to high-end audio, taking your sound to places you never thought possible and giving you precise creative control. With vacuum tube and discrete design, the VT-737SP provides a wide range of tube tone and control: Avalon sound with maximum flexibility.

AVALON DESIGN

PURE CLASS A MUSIC RECORDING SYSTEMS

PreSonus DigiMax™ Pristine 8-channel mic pre-amplification for the MOTU 2408 audio interface

Why is the PreSonus DigiMax perfect for your MOTU rig? Because it's the purest path to digital. DigiMax combines 8 channels of award winning 24-bit mic pre-amplification with our unique simultaneous RMS/peak detection limiting and EQ enhancement, giving you maximum gain before clipping while maintaining the musical transparency of a compressor. The result? Fast, natural and versatile limiting on every channel. And DigiMax connects all 8 channels via ADAT optical to your MOTU 2408 system in pristine, 24-bit digital glory. And you can expand: add up to 3 DigiMax's to your 2408.

CM Labs MotorMix™

Hands-on automated mixing for Digital Performer

With its new, custom software written specially for Digital Performer, MotorMix becomes a seamless, tactile extension of your MOTU software recording environment. Put your hands on eight 100mm motorized faders and rotary encoders to tweak your mixes in record time. Gain instant easy access to all MIDI and audio tracks with control banks. You'll never even think about mixing with a mouse again. Imagine having tactile control over most of Digital Performer's features with MotorMix's intuitive layout and easy operation. MotorMix gives you all the advantages of a professional mixing board, at an incredibly affordable price. Bring motorized mixing to your MOTU desktop today. For more info, visit cmlabs.net or contact your Sweetwater sales engineer today to enter the future of mixing.

CM Labs DashBoard™

Editing worksurface for Digital Performer

In the beginning, there was only magnetic tape and razor blades, but editors could still make over 200 edits per hour! Dashboard restores speed and finesse to editing with DP3 and eliminates fatigue caused by point-and-click editing. Dashboard will bring you the same level of control to Digital Performer as the very popular Motor Mix. Dashboard can operate as a stand-alone worksurface, or it can be fitted to one or more Motor Mixes. Dashboard's Locator, Navigator and Zoom control sections get you qickly to where you want to edit, and the Clipboard section makes your actual edits. You can arm and record tracks remotely with Dashboard just like machine control. The mixer section provides access to Digital Performer's mixer and plug-ins.

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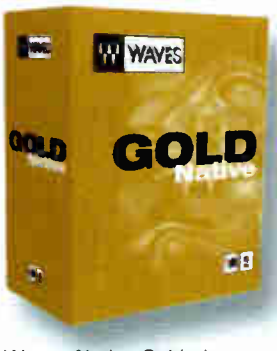
Optimized perfomance and complete automation



Check out the new Restoration Bundle — download the demo at www.waves.com

Waves Native Gold gives you the complete line of legendary "must-have" Waves processing, including C4 MultiBand and Renaissance Reverb. Version 3.2 introduces cutting edge performance optimizations and complete MAS automation. What does this mean for you? Apply more Waves processing to your mixes than ever before possible. Automate your Waves plug-ins with pristine, sample-accurate precision and 32-bit floating point processing. You get everything you need to track, sweeten, sound design and master. Get Native Gold now and join the top industry pros who rely on Waves to make their mixes Gold everyday.

Smart Code Pro™

Surround Encoder Plug-ins For DP3

KIND OF LOUD

SmartCode Pro is the first and only surround encoder plug-in for Digital Performer. It allows you to deliver fully encoded surround mixes to your clients. Burn CDs or DVDs that you can preview using any consumer DVD player that supports Dolby Digital™ or DTS™ — a crucial final step in producing professional quality surround mixes. By encoding with Smart Code Pro directly within DP3, you avoid having to invest in expensive dedicated hardware encoders (that cost thousands), which saves you both time and money.

SmartCode Pro is available in two versions to accommodate the two most widely used surround formats: Dolby Digital and DTS. Both versions allow you to preview your 5.1 surround mixes in real time 5.1, then encode and decode the mix to create a 6-channel surround master. Smart Code Pro is a must-have for serious surround production with DP3.

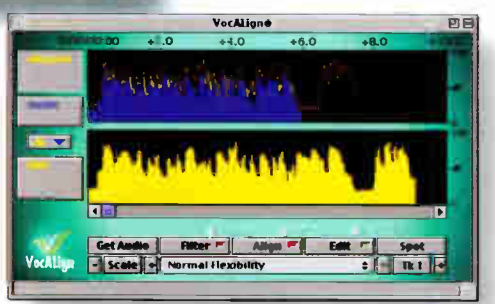
GLYPH TECHNOLOGIES, INC. M Project™

High-performance FireWire hard drive storage

M Project is the new FireWire hard drive for your MOTU hard disk recording system from Glyph Technologies. M Project adds up to 75 GB of audio storage to your MOTU rig in seconds, backed by Glyph's legendary service and support. M Project is the only MOTU-approved FireWire drive for the 828 and all MOTU PCI-324-based systems, including the 2408mkII, 1296, 1224 or 24i. M Project easily shares the FireWire bus with the 828, and even allows you to connect multiple 828s to your computer. And M Project is the ideal alternative to SCSI drives because it frees up a PCI slot. So call Sweetwater today and ask about M Project, the ultimate storage solution for MOTU hard disk recording.

SYNCHRO ARTS VocALign™ Project

Unique automated audio alignment software



Still spending hours re-recording dialog or vocals? There is another way! Because of its unique ability to align two signals, VocALign can be used creatively to take guide or even live tracks and create performances with perfectly aligned overdubs. VocALign also gives the producer the ability to choose the rhythm and pace for a specific vocal, or even lay down the required tempo pattern for the artist. VocALign gives you perfectly aligned double-tracked vocals, tight backing vocals, easy re-grooving of recorded vocals for remixing and shorter overdub sessions. For post-production, VocALign is designed to take a line of replacement dialog and precisely align it with the dialog recorded with picture. And VocALign Project™ integrates seamlessly with Digital Performer 3. At only $299 list, can you afford to be without it?

Digidesign Soft SampleCell

Maximizing the Possibilities

SampleCell has been a mainstay of Mac-based musicians and sound designers for a number of years. The software integrates perfectly with any sequencer or sound design program, and provides an elegant, deceptively simple interface for arranging and playing samples.

Recently, it has been somewhat eclipsed by software-based samplers, which use less-expensive sound cards, or even the Mac's own sound-generating capabilities, to replace SampleCell's rather pricey dedicated card. So fans of the product were happy to see last year's release of the software-only Soft SampleCell, at about one-third the price of the original. Soft SampleCell works with Apple's Sound Manager, and with Pro Tools LE or TDM using DirectConnect.

Because the program is using computer RAM, the amount of memory available for storing samples is effectively unlimited, and the polyphony and the maximum number of instruments in a bank have both increased to 64. Whether or not you're using massive amounts of memory, you can still take advantage of the extra flexibility this offers.

SPLITTING AND LAYERING VOICES

Even though you only have 16 MIDI input channels, the large number of instruments available lets you create very complex layouts. For example, you can create two different drum kits, each with its own set of samples, on one MIDI channel. Make two different instruments, and assign one instrument to the lower half of the keyboard range (A0 to C4) while you assign the other one to the upper half (C4 to C8). Now load your samples into the instruments—you can put up to 48 different sounds into each kit. Just remember to turn off "Key Track" in the Miscellaneous Parameters window so the sample pitches don't change and to set your keyboard or MIDI drum pad to the correct pitch range to play each set.

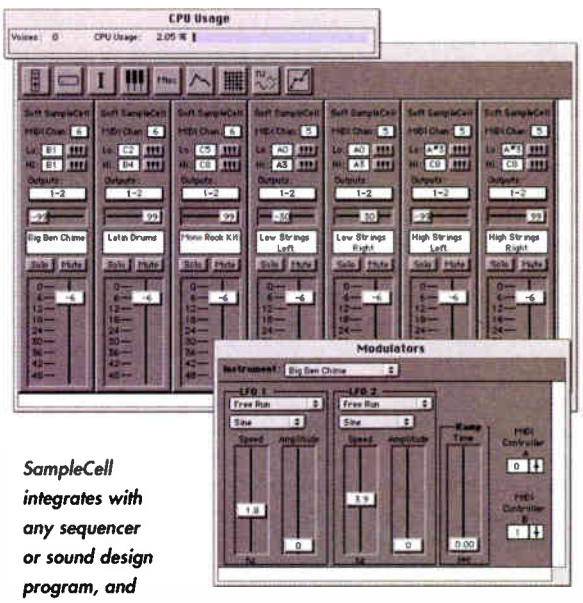
If you are using a Pro Tools system, then you can route the outputs of the two instruments to two different pairs of audio outputs, letting you mix and process the drum sets individually.

Similarly, if you want to isolate a single sound from a group of samples, then create an instrument with a range of just that one note, and give it its own audio output.

ALTERNATIVE SCALES

You can create microtonal or macrotonal scales using the MIDI Note Number parameter in the Matrix window. Assign that parameter to Pitch, and give it a value of 99. This will transpose the voice up about a fifth, but it will also "stretch" the octave, so that two notes played an octave apart will sound a major ninth apart, and to hear a true octave, you have to play a minor seventh. Setting the same parameter to -99 has the reverse effect: The voice goes down a fifth and the octave shrinks, so that playing an octave gives you a major sixth, while to get a real octave, you need to play a minor tenth.

If you want to get really micro, assign MIDI Note Number as above, but then turn off Key Track. Now each played octave is only about a whole step.



SampleCell integrates with any sequencer or sound design program, and provides a simple interface for arranging and playing samples.

RAMPING THE PITCH

Many instrumental sounds can benefit from having a little, quick pitch change right on their attack. You can create a complex frequency envelope with one of the envelopes, but the Ramp Generator can actually do a better job. In the Matrix window, assign the Ramp Generator to Pitch, with a factor of not more than 10. Set the Ramp Generator itself to about 0.03 seconds. The pitch will start a little higher than the played note, quickly ramp up a bit, then jump back down to the final pitch.

VARYING DRUM SOUNDS

Putting a little variation in the pitch or harmonic spectrum of a drum sound can do wonders to keep it from becoming monotonous. The best way to do this is to make one or both of those characteristics velocity-dependent, and then make sure that your sequencer track contains a range of velocities, either randomly distributed or in places you want accents. Isolate the drum you want to affect on its own instrument. In the Matrix, assign velocity to pitch with a negative value, say about -30, so the drum gets deeper the harder you hit it. Set the nominal filter frequency pretty low, around 100 Hz or less, and assign velocity to Filter Frequency with a high value: 90 or more. This will make the sound brighter as you hit the key harder. Soft SampleCell has a new feature, which is a fourth-order filter with resonance, for that "analog" effect. To make a $1,000 drum library sound like a TR-808, simply set the resonance high.

A FINAL NOTE

Digidesign says you need at least a blue-and-white Mac G3 and OS 9.0.1 to run Soft SampleCell. You don't: As I'm writing this, I'm running it very successfully on my old, beige G3 with System 8.6. My polyphony runs out at about 52, but I'm really not going to worry about that. ■

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